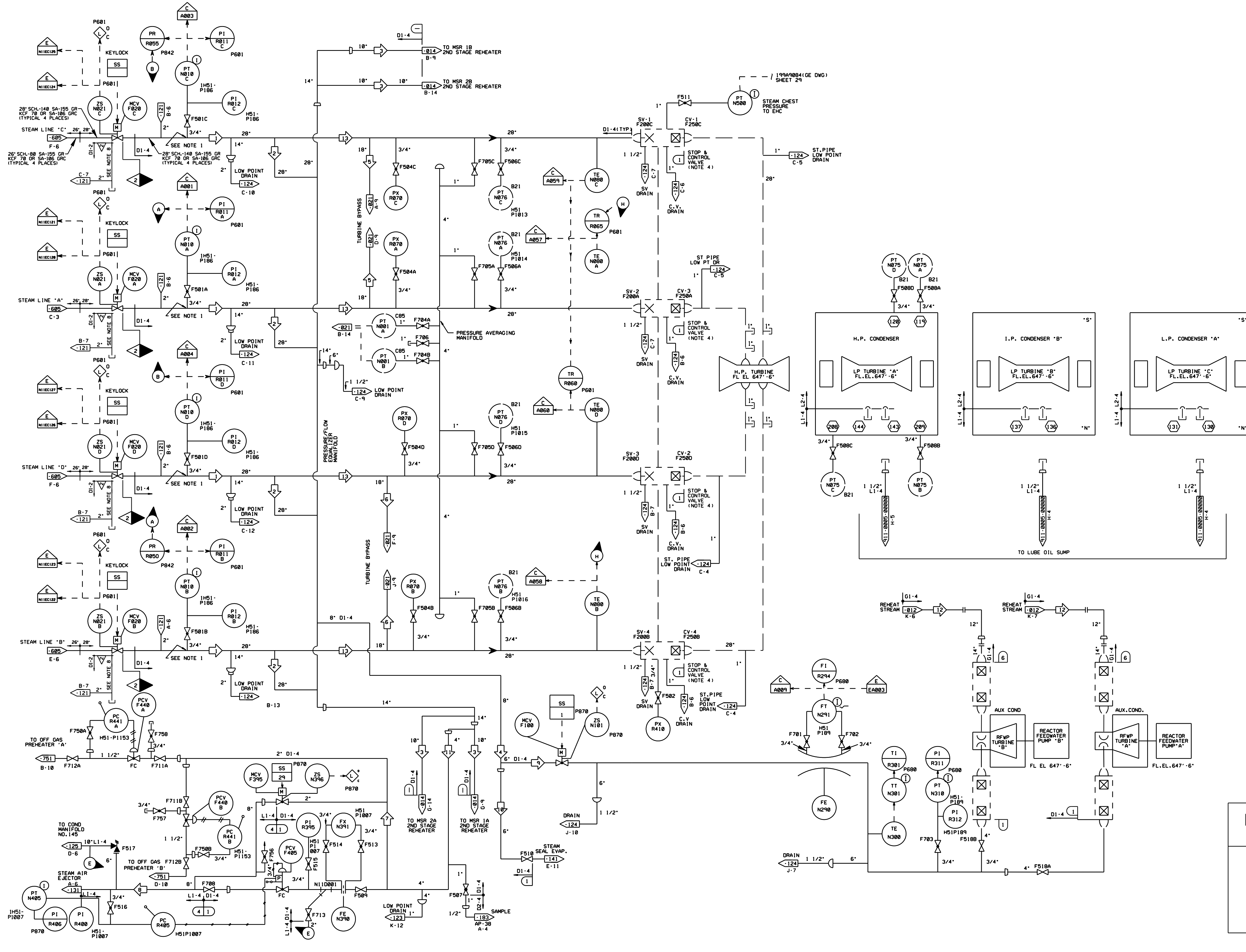


OPERATING DATA

SEE NOTES 6, 7

#	PSIG	LBS/HR	°F	REMARKS
1	966	4071689	542	
2	959	186954	541	75%LOAD
3	959	180651	541	75%LOAD
4	959	107432	541	STARTUP
5	966	1612354	542	BYPASS
6	966	1209266	542	BYPASS
7	966	836	542	
8	150	24377	370	
9	959	53442	541	25%LOAD
10	959	30100	541	STARTUP
11	959	25213	541	
12	164	94847	511	
13	966	3889940	542	

DESIGN DATA

#	NORMAL		UPSET			REMARKS
	PSIG	°F	PSIG	°F	TIME	
1	1250	575	1250	575		
4	180	400	180	400		
6	248	512	248	512		

REFERENCES:

302-0012-00000 REHEAT STEAM SYSTEM N11
302-0014-00000 REHEATER REHEATING STEAM SYSTEM N11
302-0121-00000 MAIN, REHEAT, EXTRACTION AND MISCELLANEOUS DRAINS N22
302-0123-00000 MAIN, REHEAT, EXTRACTION AND MISCELLANEOUS DRAINS N22
302-0124-00000 MAIN, REHEAT, EXTRACTION AND MISCELLANEOUS DRAINS N22
302-0125-00000 MAIN, REHEAT, EXTRACTION AND MISCELLANEOUS DRAINS N22
302-0131-00000 CONDENSER AIR REMOVAL SYSTEM N62
302-0141-00000 STEAM SEAL SYSTEM N33
302-0183-00000 TURBINE PLANT SAMPLING SYSTEM P33
302-0751-00000 OFF GAS SYSTEM N64
828E445CA GE NED NUCLEAR STEAM SUPPLY SHUTOFF SYSTEM ELEMENTARY
199A9084 GE TURBINE INTERCONNECTION DIAGRAM
302-0021-00000 STEAM BYPASS AND PRESSURE REGULATION SYSTEM C85
302-0605-00000 NUCLEAR BOILER SYSTEM B21
802-0009-00000 REACTOR-TURBINE GENERATOR TRIP DIAGRAM
911-0005-00000 LUBE OIL AREA, TURBINE LAY-DOWN, AND WATER TREATMENT
911-0005-00000 LUBE OIL AREA, TURBINE LAY-DOWN, AND WATER TREATMENT BUILDING DRAINS P68

NOTES:

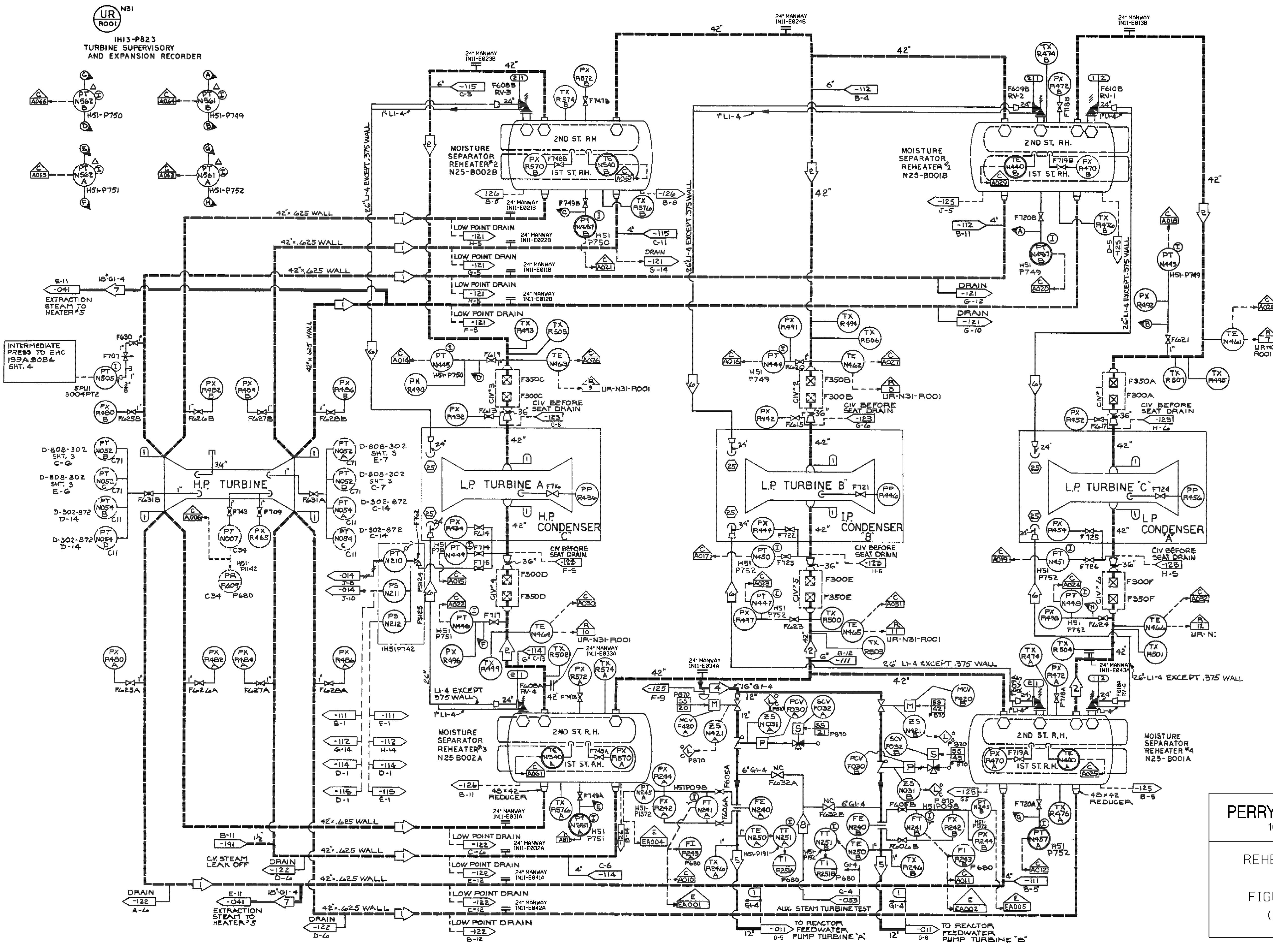
1. PRESSURE TAPS TO MEET ASME PTC6194 "STEAM TURBINE" PARAGRAPH 4.74.
2. REACTOR FEEDWATER PUMP TURBINE SHOWN ON GE DWG. 509E419DC.
3. CONDENSER SHOWN ON I-R DWG N4-WRGB4-501X1(6 SHEETS).
4. MAIN STEAM STOP AND CONTROL VALVE ASSEMBLY SHOWN ON GE DWG. 832E857
5. ALL PANELS AND RACKS ARE PREFIXED 1H13, UNLESS OTHERWISE NOTED.
6. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
7. OPERATING DATA IS TYPICALLY DERIVED FROM GE THERMAL KIT HEAT BALANCES. THE THERMAL KIT HEAT BALANCES ARE KEPT IN DESIGN INPUT RECORD (DIR) 237. OPERATING DATA SHOWN IS FOR RATED CONDITIONS APPLICABLE TO THE IMPLEMENTATION OF THE FOLLOWING PLANT CHANGES:
   a.) POWER UPRATE TO 105% OF THE ORIGINAL DESIGN (REF.: TAF 81794)
   b.) PARTIAL ARC ADMISSION (REF.: DCP 98-0050)
   NOTE: PARTIAL ARC PARAMETER CHANGES (UP & DOWN) ARE SHOWN ONLY IF THEY ARE GREATER THAN 1% OF THE POWER UPRATE VALUES.
   c.) LOW PRESSURE TURBINE ROTOR REPLACEMENT (REF.: ECP 04-0070).
8. THIS PORTION OF PIPING IS DESIGNATED AS E32 (MSIV LEAKAGE CONTROL) FOR ASME CODE PURPOSES ONLY.

(Rev. 18 10/13)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

MAIN STEAM SYSTEM, UNIT 1

FIGURE 10.1-1 (SHEET 1 OF 3)
(DWG. D-302-0011-00000)



OPERATING DATA (RATED)

SEE NOTES 2, 3

#	PSIG	LB/HR	°F	REMARKS
1	180	1638352	380	
2	169	1885721	511	
4	164	189695	512	
5	164	94847	512	
6	93	2,100,000	515	
7	180	382533	380	
8	150	20,000	368	RFPT TEST

DESIGN DATA

#	NORMAL		UPSET			REMARKS
	PSIG	°F	PSIG	°F	TIME	
1	248	510				
2	140	515				

REFERENCES:

302-0011-00000	MAIN STEAM SYSTEM N11
302-0041-00000	EXTRACTION STEAM N36
302-0052-00000	AUXILIARY STEAM P61
302-0121-00000	MAIN, REHEAT, EXTRACTION AND MISCELLANEOUS DRAINS N22
302-0122-00000	MAIN, REHEAT, EXTRACTION AND MISCELLANEOUS DRAINS N22
302-0123-00000	MAIN, REHEAT, EXTRACTION AND MISCELLANEOUS DRAINS N22
302-0125-00000	MAIN, REHEAT, EXTRACTION AND MISCELLANEOUS DRAINS N22
828E531CA	G.E. REACTOR PROTECTION SYSTEM ELEMENTARY C71
851E478	G.E. ROD CONTROL AND INFORMATION SYSTEM ELEMENTARY C11
851E567	G.E. FEEDWATER CONTROL SYSTEM 1ED C34
119A9084	G.E. TURBINE INTERCONNECTGION DIAGRAM

NOTES:

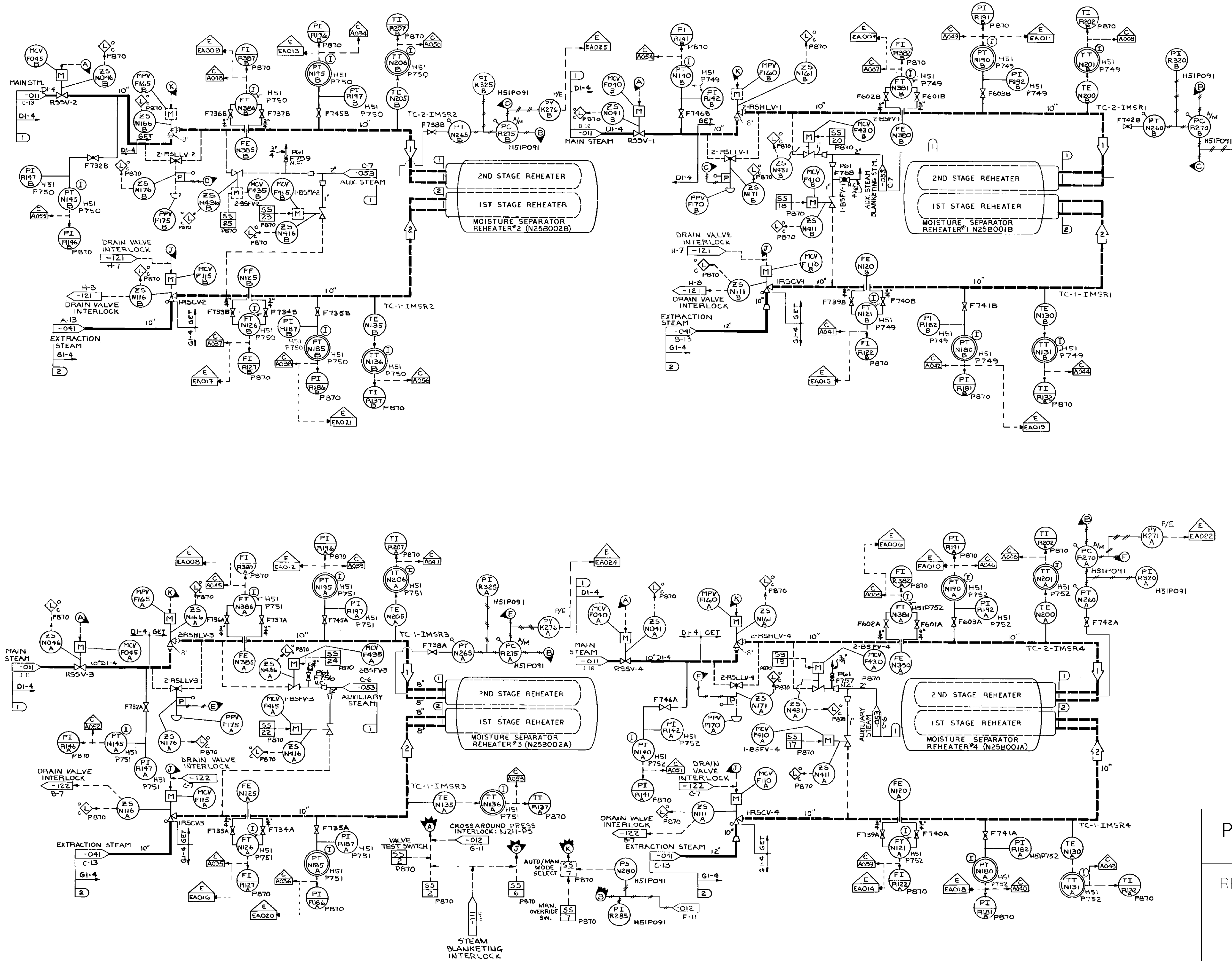
1. ALL PANELS AND RACKS ARE PREFIXED 1H13, UNLESS OTHERWISE NOTED.
2. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
3. OPERATING DATA IS TYPICALLY DERIVED FROM GE THERMAL KIT HEAT BALANCES. THE THERMAL KIT HEAT BALANCES ARE KEPT IN DESIGN INPUT RECORD (DIR) 237. OPERATING DATA SHOWN IS FOR RATED CONDITIONS APPLICABLE TO THE IMPLEMENTATION OF THE FOLLOWING PLANT CHANGES:
   a.) POWER UPRATE TO 105% OF THE ORIGINAL DESIGN (REF.: TAF 81794).
   b.) PARTIAL ARC ADMISSION (REF.: DCP 98-0050)
   NOTE: PARTIAL ARC PARAMETER CHANGES (UP & DOWN) ARE SHOWN ONLY IF THEY ARE GREATER THAN 1% OF THE POWER UPRATE VALUES.
   c.) LOW PRESSURE TURBINE ROTOR REPLACEMENT (REF.: ECP 04-0070).

(Rev. 18 10/13)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

REHEAT STEAM SYSTEM, UNIT 1

FIGURE 10.1-1 (SHEET 2 OF 3)
(DWG. D-302-0012-00000)



OPERATING DATA (RATED) SEE NOTES 2, 3				
#	PSIG	LB/HR	°F	REMARKS
1	959	186954	541	75% LOAD
2	546	195854	479	

DESIGN DATA						
#	NORMAL		UPSET			REMARKS
	PSIG	°F	PSIG	°F	TIME	
1	1250	575				
2	620	495				

NOTES:

1. ALL PANELS AND RACKS ARE PREFIXED 1H13, UNLESS OTHERWISE NOTED.

2. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.

3. OPERATING DATA IS TYPICALLY DERIVED FROM GE THERMAL KIT HEAT BALANCES. THE THERMAL KIT HEAT BALANCES ARE KEPT IN DESIGN INPUT RECORD (DIR) 237. OPERATING DATA SHOWN IS FOR RATED CONDITIONS APPLICABLE TO THE IMPLEMENTATION OF THE FOLLOWING PLANT CHANGES:
   - a.) POWER UPRATE TO 105% OF THE ORIGINAL DESIGN (REF.: TAF 81794)
   - b.) PARTIAL ARC ADMISSION (REF.: DCP 98-0050)
     NOTE: PARTIAL ARC PARAMETER CHANGES (UP & DOWN) ARE SHOWN ONLY IF THEY ARE GREATER THAN 1% OF THE POWER UPRATE VALUES.
   - c.) LOW PRESSURE TURBINE ROTOR REPLACEMENT (REF.: ECP 04-0070).

REFERENCES:

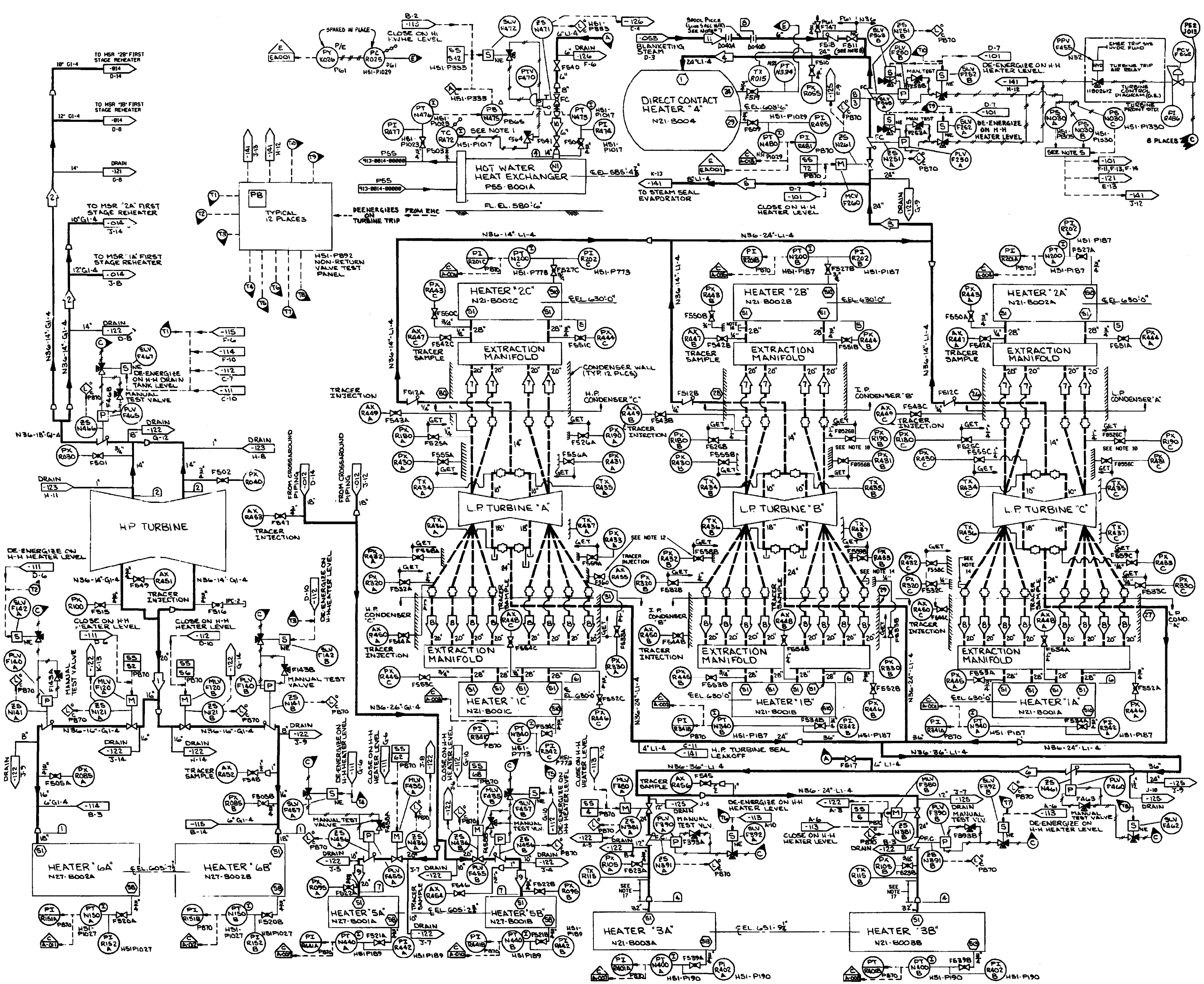
302-0011-00000	MAIN STEAM SYSTEM N11
302-0012-00000	REHEAT STEAM SYSTEM N11
302-0041-00000	EXTRACTION STEAM N36
302-0111-00000	HIGH PRESSURE HEATER DRAINS AND VENTS "A" N25
302-0121-00000	MAIN, REHEAT, EXTRACTION AND MISCELLANEOUS DRAINS N22
43 -0099-00000	REHEATER HEATING STEAM PIPING/PROTECTION DIAGRAM GET

(REV. 20 10/2017)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

REHEATER HEATING STEAM SYSTEM

FIGURE 10.1-1 (SHEET 3 OF 3)
(DWG. D-302-0014-00000)



OPERATING DATA (RATED)

SEE NOTES 9 & 11

	LB/HR	PSIA	°F	REMARKS
1	873,789	362	435	4th STAGE EXTRACTION
2	391,789	561	479	2nd STAGE
3	382,119	107	412	8th STAGE
4	358,758	107	412	8th STAGE
5	23,361	107	412	8th STAGE
6	789,824	64	318	9th STAGE
7	54,959	19.6	227	11th STAGE (VAPOR)
7	1,497	19.6	227	11th STAGE (MOISTURE)
8	19,220	5.3	164	13th STAGE (VAPOR)
8	5,387	5.3	164	13th STAGE (MOISTURE)
8	4,779	5.3	164	12th STAGE (MOISTURE BLOWDOWN)
9	382,533	195	380	
10	40,000	65.4	286	
11	0	165	366	MAXIMUM SHUTDOWN

REFERENCES:

302-0014-00000 REHEAT HEATING STEAM SYSTEM N11
302-0101-00000 CONDENSATE SYSTEM N21
302-0111-00000 HIGH PRESSURE HEATER DRAINS AND VENTS "A" SYSTEM N25
302-0112-00000 HIGH PRESSURE HEATER DRAINS AND VENTS "B" SYSTEM N25
302-0113-00000 LOW PRESSURE HEATER DRAINS AND VENTS SYSTEM N26
302-0121-00000 MAIN, REHEAT, EXTRACTION, AND MISCELLANEOUS DRAINS SYSTEM N22
302-0122-00000 MAIN, REHEAT, EXTRACTION, AND MISCELLANEOUS DRAINS SYSTEM N22
302-0123-00000 MAIN, REHEAT, EXTRACTION, AND MISCELLANEOUS DRAINS SYSTEM N22
302-0125-00000 MAIN, REHEAT, EXTRACTION, AND MISCELLANEOUS DRAINS SYSTEM N22
302-0141-00000 STEAM SEAL SYSTEM N33
913-0015-00000 HOT WATER HEATING SYSTEM DIAGRAM - HEATER BAY AUXILIARY BUILDING AND TURBINE POWER COMPLEX P55
11802S12 TURBINE CONTROL DIAGRAM SYSTEM N32 (G.E.)
302-0114-00000 HIGH PRESSURE HEATER DRAINS AND VENTS "A" SYSTEM N25
302-0115-00000 HIGH PRESSURE HEATER DRAINS AND VENTS "B" SYSTEM N25
892E242 EXTRACTION DIAGRAM (GET)
302-0012-00000 REHEAT STEAM SYSTEM N11
913-0014-00000 HOT WATER HEATING SYSTEM P55
302-0126-00000 MAIN, REHEAT, EXTRACTION, AND MISCELLANEOUS DRAINS SYSTEM N22
302-0053-00000 AUXILIARY STEAM SYSTEM P61

DESIGN DATA

P	NORMAL		UPSET			REMARKS
	PSIG	°F	PSIG	°F	TIME	
1	395	450				
2	620	495				
3	110	430				
4	75	330				
5	50	240				
6	50	185				
7	200	385				
8	120	430				

NOTES:

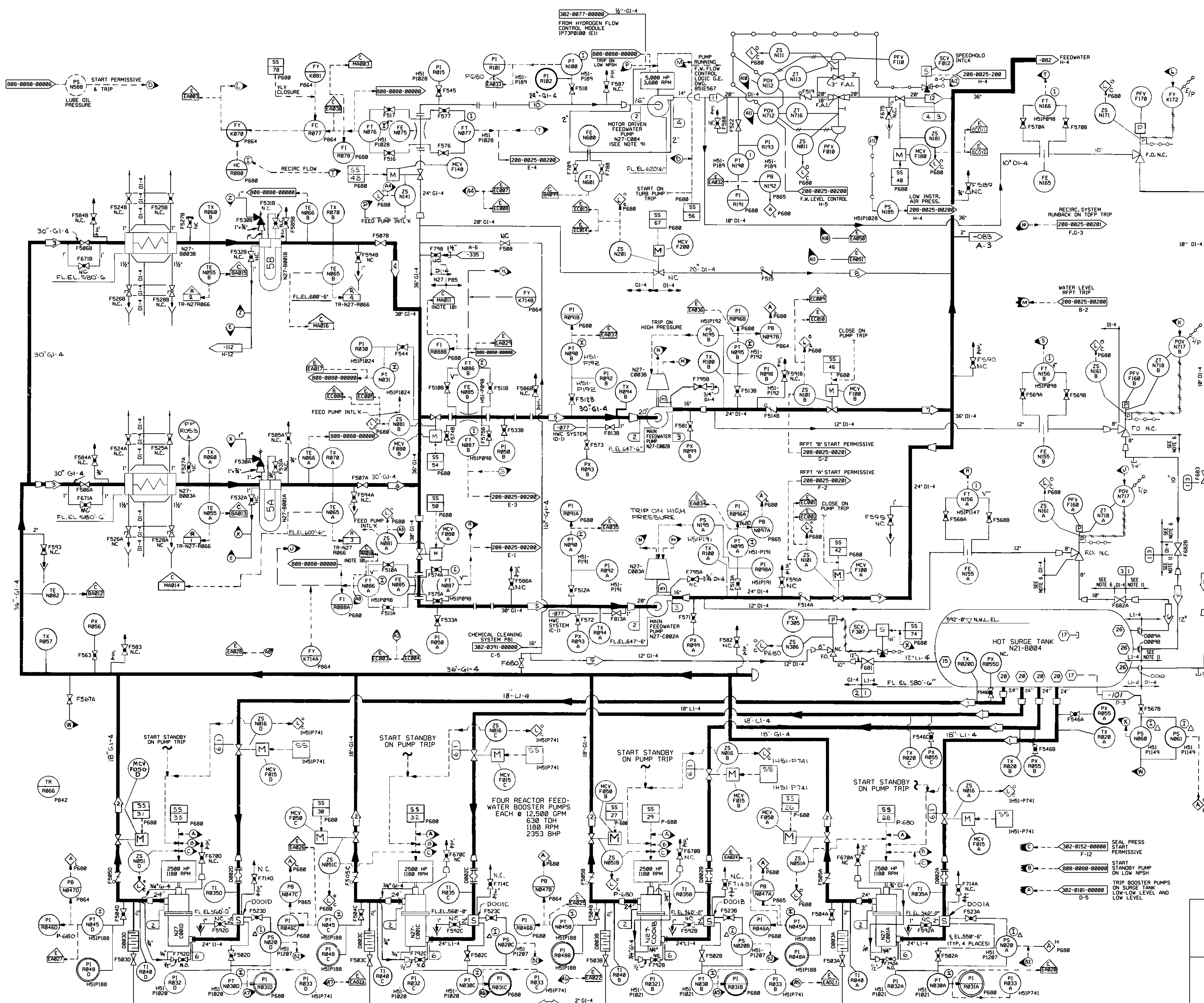
1. PRESSURE BISTABLE ENERGIZES WHEN SHELL PRESSURE EXCEEDS TUBE PRESSURE.
2. ALL INSTRUMENTS AND CONTROL DEVICES CARRY PREFIX N36, EXCEPT AS NOTED.
3. ALL PANELS OR RACKS ARE PREFIXED 1H13, UNLESS OTHERWISE NOTED.
4. ALL VALVES IN THE NO.5 AND NO.6 HEATER EXTRACTION LINES AND THE 1ST STAGE REHEATER STEAM SUPPLY LINES ARE CARBON STEEL.
5. TWO OUT OF THREE LOGIC.
6. ASME TEST CONNECTION VALVES F0544B 7 C, F0555A, F0556B & C AND F0558C ARE PLUGGED INSIDE THE TURBINE CASING AND NO LONGER IN SERVICE.
7. D0040A & B ARE ⅜" THICK BLANK ORIFICE PLATES.
8. VALVE 1N36F0511 HAS BEEN RENDERED INOPERABLE BY LEAK SEALANT INJECTION.
9. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
10. ASME TEST CONNECTION LINES FOR F0526B AND C ARE REMOVED BETWEEN THE CONDENSER SHELL COUPLING AND THE TURBINE SHELL COUPLING AND PLUGGED AT THE TURBINE SHELL COUPLING AND ARE NO LONGER IN SERVICE.
11. OPERATING DATA IS TYPICALLY DERIVED FROM GE THERMAL KIT HEAT BALANCES. THE THERMAL KIT HEAT BALANCES ARE KEPT IN DESIGN INPUT RECORD (DIR) 237. OPERATING DATA SHOWN IS FOR RATED CONDITIONS APPLICABLE TO THE IMPLEMENTATION OF THE FOLLOWING PLANT CHANGES:
    A. POWER UPRATE TO 105% OF ORIGINAL DESIGN (REF.: TAF 81794)
    B. PARTIAL ARC ADMISSION (REF.: DCP 98-0050)
       NOTE: PARTIAL ARC PARAMETER CHANGES (UP OR DOWN) ARE SHOWN ONLY IF THEY ARE GREATER THAN 1% OF THE POWER UPRATE VALUES.
    C. LOW PRESSURE TURBINE ROTOR REPLACEMENT (REF.: ECP 04-0070).
12. ASME TEST CONNECTION LINES FOR F0558B & F0560 ARE CUT OFF & CAPPED ON THE CONDENSER END INTERNAL TO THE CONDENSER. THESE VALVES SHOULD REMAIN CLOSED.
13. ASME TEST CONNECTION LINES FOR F0526A, F0559A & F0559B ARE CUT OFF & CAPPED ON THE CONDENSER END INTERNAL TO THE CONDENSER. THE VALVES SHOULD REMAIN CLOSED.
14. ASME TEST CONNECTION LINES FOR F0532C & F0533B ARE REMOVED BETWEEN COND. SHELL/TURBINE & CAPPED AT TURBINE. VALVES SHOULD REMAIN CLOSED.
15. VENDOR DRAWING 43-0168-00001 PROVIDES FUNCTIONAL LOCATIONS FOR THE EXTRACTION STEAM METAL BELLOWS EXPANSION JOINTS ASSOCIATED WITH LOW PRESSURE TURBINE A AND B. VENDOR DRAWING 43-0169-00001 PROVIDES FUNCTIONAL LOCATIONS FOR THE EXTRACTION STEAM METAL BELLOWS EXPANSION JOINTS ASSOCIATED WITH LOW PRESSURE TURBINE C. NAMING CONVENTION FOR THE FUNCTIONAL LOCATIONS IS GIVEN BELOW:
    FLOC: PY-1N36D0841A
    DESCRIPTION: 8TH STAGE EXTR STM TO FW OC HTR 4 10-INCH BELLOWS #1 FROM LP TURB A
    WHERE: "PY" PLANT
    "1" UNIT
    "N36" SYSTEM
    "D" EQUIPMENT TYPE
    "08" EXTRACTION STEAM STAGE
    "4" FEEDWATER HEATER TRAIN SUPPLIED
    "1" SEQUENTIAL BELLOWS NUMBER
    "A" ASSOCIATED LOW PRESSURE TURBINE
16. ASME TEST CONNECTION LINE FOR VALVE PY-1N36F0550B IS REMOVED BETWEEN THE PY-1N21B0002B NOZZLE COUPLING AND THE CONDENSER SHELL COUPLING AND PLUGGED AT THE PY-1N21B0002B NOZZLE COUPLING.
17. EXCEPTION ON LINE SPEC L1-4. THE 32"x24" REDUCER AND THE FIRST 24" ELBOW UPSTREAM OF THE REDUCER ARE CHROME-MOLY.

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

EXTRACTION STEAM

FIGURE 10.1-2
(DWG. D-302-0041-00000)



OPERATING DATA (RATED)

SEE NOTES 7, 8

#	PSIA	GPM	°F	REMARKS
1	108	11,991	329	
2	362	11,981	329	
3	345	17,996	329	
4	315	18,494	370	
5	292	18,494	370	
6	10	4,000	125	START-UP
7	1127	18,436	372	
8	280	7,500	75	PRESTART-UP
9	280	5,000	125	START-UP
10	292	8,300	369	
11	1120	8,270	370	UPSET CONDITION
12	1085	8,270	370	UPSET CONDITION
13	98	4,000	125	MDFP START-UP
14	300	25-110	329	

DESIGN DATA

#	NORMAL		UPSET			REMARKS
	PSIG	°F	PSIG	°F	TIME	
1	120	350	120	350		
2	500	400	500	400		
3	1500	400	1500	400		
4	1540	400	1540	400		
5	120	400	120	400		
6	145	350	145	350		SEE NOTE 12 FOR STRAINERS 1N27D0001A, B, C, & D

NOTES:

1. ITEMS SUPPLIED BY G.E. HAVE PREFIX B21.
2. SEAL WATER SUPPLY PRESSURE 310 PSIA.
3. PIPING DRAINS ARE 1" AND PIPING VENTS ARE ¾" UNLESS OTHERWISE NOTED.
4. ALL INSTRUMENTS AND CONTROLS ARE PREFIXED 1N27, UNLESS OTHERWISE NOTED.
5. ALL PANEL AND RACKS CARRY PREFIX 1H13, UNLESS OTHERWISE NOTED.
6. PIPE TO BE ASTM A312 TP 316L.
7. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
8. OPERATING DATA IS TYPICALLY DERIVED FROM GE THERMAL KIT HEAT BALANCES. THE THERMAL KIT HEAT BALANCES ARE KEPT IN DESIGN INPUT RECORD (DIR) 237. OPERATING DATA SHOWN IS FOR RATED CONDITIONS APPLICABLE TO THE IMPLEMENTATION OF THE FOLLOWING PLANT CHANGES:
   - a.) POWER UPRATE TO 105% OF THE ORIGINAL DESIGN (REF.: TAF 81794)
   - b.) PARTIAL ARC ADMISSION (REF.: DCP 98-0050)
     NOTE: PARTIAL ARC PARAMETER CHANGES (UP & DOWN) ARE SHOWN ONLY IF THEY ARE GREATER THAN 1% OF THE POWER UPRATE VALUES.
   - c.) LOW PRESSURE TURBINE ROTOR REPLACEMENT (REF.: ECP 04-0070).
9. SEE DRAWING 26 -0179-00001 FOR THE LUBE OIL SYSTEM COMPONENT INTERFACES WITH THE MOTOR DRIVEN FEEDWATER PUMP 1N27C0004.
10. COMPUTER POINTS MA010 AND MA011 PROVIDE AVERAGE FEEDWATER PUMP SUCTION FLOW RATES - MA010 AVERAGES TRANSMITTERS 1N27N0086A & 87A; MA011 AVERAGES 1N27N0086B & 87B.
11. PIPE TO BE A335 GRADE P22.
12. F.W. BOOSTER PUMP STRAINERS 1N27D0001 (A, B, C, & D) HAVE A MAXIMUM WORKING PRESSURE OF 125 PSIG AT 350°F.
13. DELETED

REFERENCES:

208-0025-00000	FEEDWATER CONTROL SYSTEM
208-0149-00000	FEEDWATER ELEMENTARY DIAGRAM
302-0082-00000	FEEDWATER N27
302-0083-00000	FEEDWATER PUMP INJECTION AND WARM-UP
302-0101-00000	CONDENSATE SYSTEM N21
302-0152-00000	CONDENSATE SEAL SYSTEM P12
302-0293-00000	M.F.P. TURBINE LUBE OIL FLOW DIAGRAM
302-0295-00000	EXTENDED M.F.P. TURBINE "A" FLOW DIAGRAM
302-0296-00000	EXTENDED M.F.P. TURBINE "B" FLOW DIAGRAM
302-0391-00000	CHEMICAL CLEANING SYSTEM P81
808-0080-00000	FEEDWATER LOOP DIAGRAMS
26 -0179-00001	LUBE OIL SYSTEM DIAGRAM FOR 1N27C0004

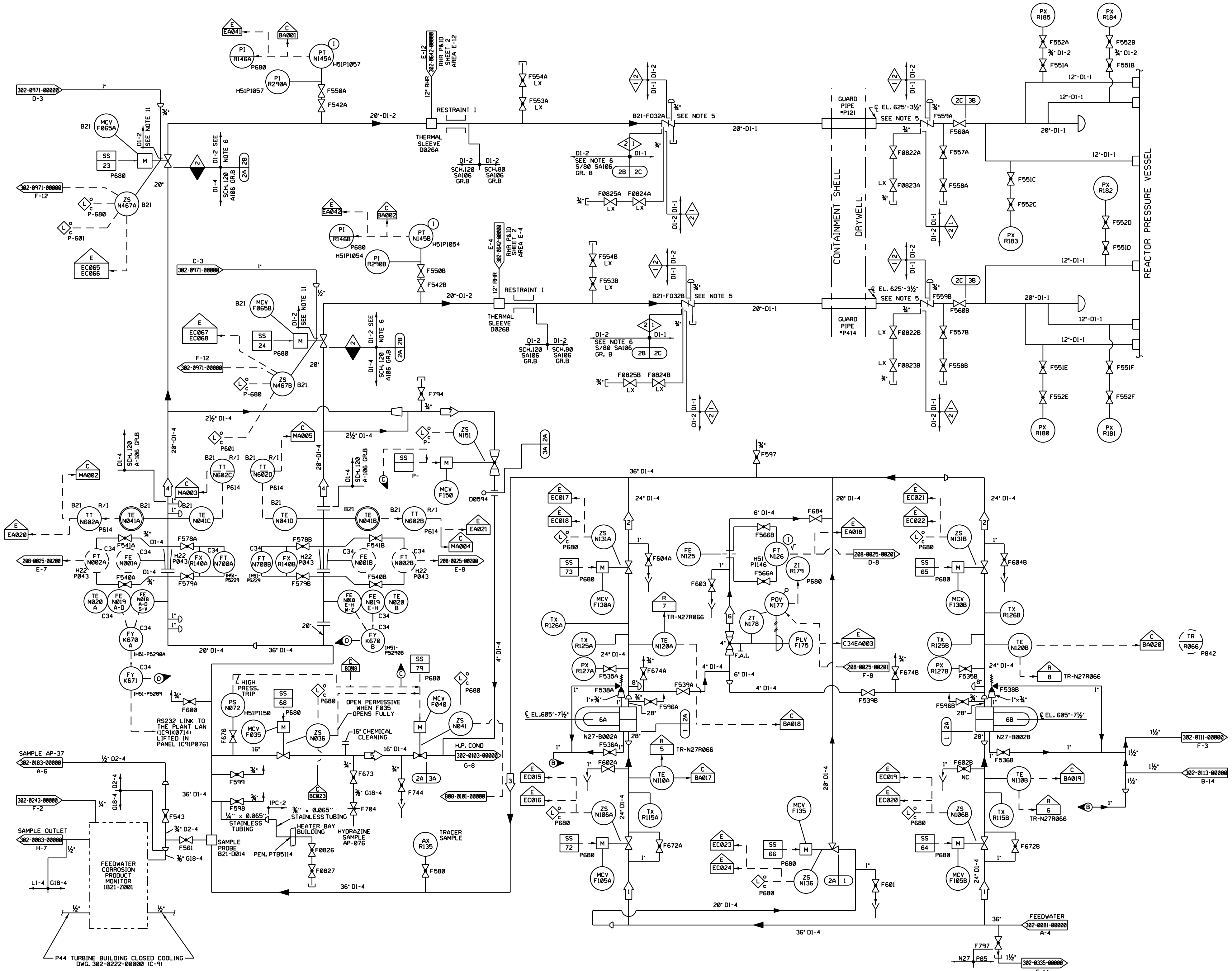
(REV. 21 10/2019)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

FEEDWATER

FIGURE 10.1-3 (SHEET 1 OF 2)

(DWG. D-302-0081-00000)



OPERATING DATA (RATED)				
	PSIA	GPM	°F	REMARKS
1	1127	18,436	372	
2	1113	19,188	425	
3	1113	38,377	425	
4	1100	19,188	425	
5	250	12,000	125	START-UP
6	935	600	125	START-UP
7	250	400	125	START-UP WITH D0594 OPEN

DESIGN DATA						
	NORMAL •		UPSET			REMARKS
	PSIG	°F	PSIG	°F	TIME	
1	1500	400	1500	400		
2A	1500	450	1500	450		
2B	1250	550	1500	550	<1%	
2C	1250	575	1500	575		
3A	50	150	50	150		
3B	1250	575	1250	575		

• SEE NOTE 7

NOTES:

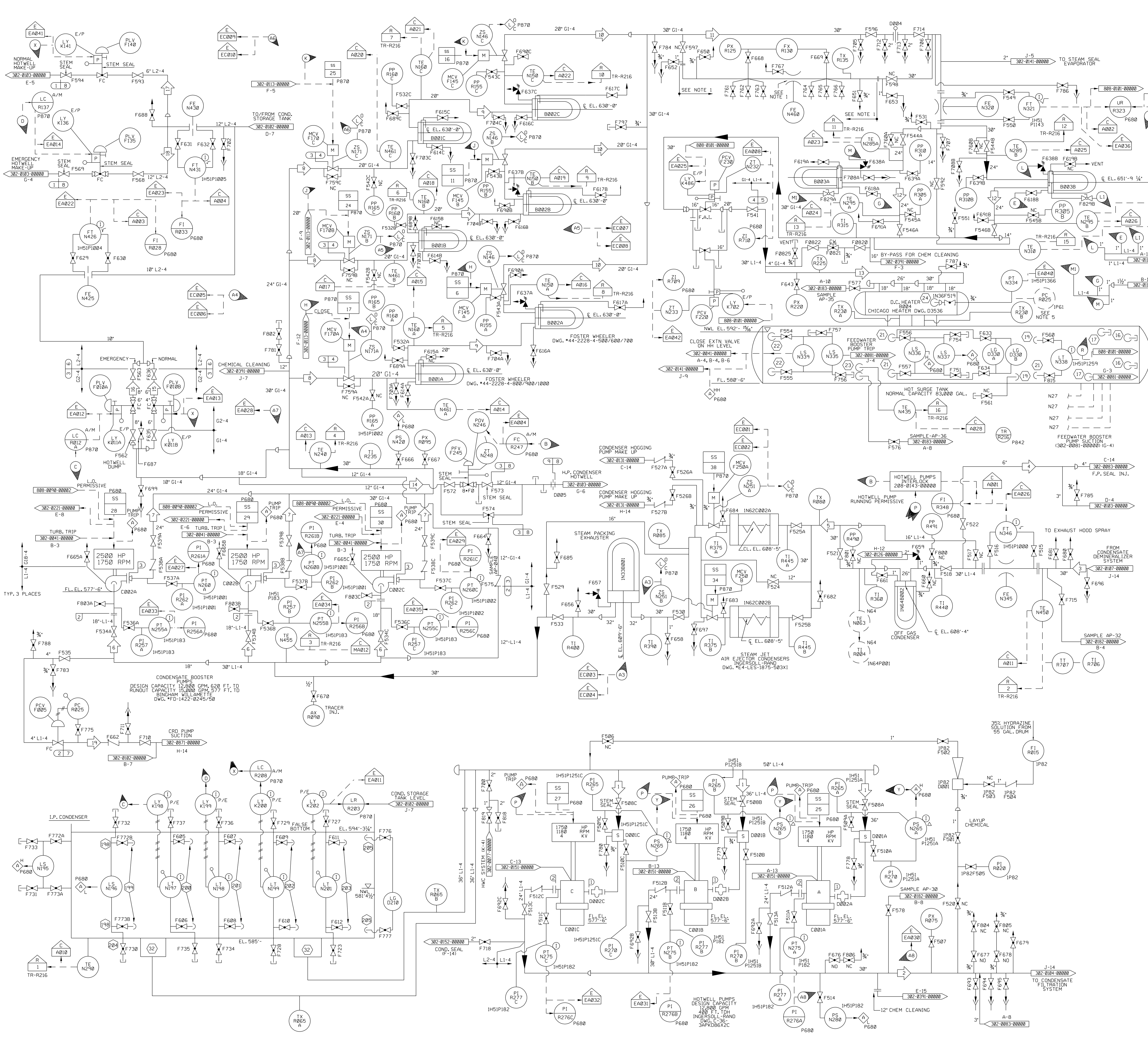
1. ALL PANELS AND RACKS ARE PREFIXED 1H13, UNLESS OTHERWISE NOTED.
2. ALL INSTRUMENTS AND CONTROLS ARE PREFIXED 1N27, UNLESS OTHERWISE NOTED.
3. PIPING DRAINS ARE 1" AND PIPING VENTS ARE ¾", UNLESS OTHERWISE SPECIFIED.
4. TWO SETS OF PRESSURE TAPS ARE PROVIDED ON EACH FEEDWATER FLOW METER SECTION. PROCESS INSTRUMENT PIPING/TUBING SHALL BE RUN FROM BOTH SETS OF TAPS WITH ONE SET PERMANENTLY CONNECTED TO THE FEEDWATER FLOW TRANSMITTER AND THE ALTERNATE SET TERMINATING ADJACENT TO THE FLOW TRANSMITTER COMPLETE WITH BLOWDOWN, INSTRUMENT SHUTOFF, AND EQUALIZING VALVE MANIFOLD TO FACILITATE IN-SERVICE MONITORING OF FLOW ELEMENT CALIBRATION UTILIZING EITHER SET OF PRESSURE TAPS.
5. CONTROLLED CLOSURE ANTIWATER HAMMER LIFT CHECK VALVES.
6. CLASS 2 PIPING MUST MEET TESTING REQUIREMENTS OF ASME III, NB-2300.
7. THE DATA IN THE NORMAL COLUMN ARE THE SYSTEM DESIGN CONDITION.
8. ¾" DOUBLE ROOT VALVES EMANATING FROM SAFETY CLASS 1 PIPING ARE SAFETY CLASS 2 AT THE POINT OF CONNECTION WITH ¾" PIPE OR FITTING AND CLASS 1 PIPE.
9. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINE-UP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPOPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
10. OPERATING DATA IS TYPICALLY DERIVED FROM GE THERMAL KIT HEAT BALANCES. THE THERMAL KIT HEAT BALANCES ARE KEPT IN DESIGN INPUT RECORD (DIR) 237. OPERATING DATA SHOWN IS FOR RATED CONDITIONS APPLICABLE TO THE IMPLEMENTATION OF THE FOLLOWING PLANT CHANGES:
    a.) POWER UPRATE TO 105% OF THE ORIGINAL DESIGN (REF.: TAF 81794).
    b.) PARTIAL ARC ADMISSION (REF.: DCP 98-0050)
    NOTE: PARTIAL ARC PARAMETER CHANGES (UP & DOWN) ARE SHOWN ONLY IF THEY ARE GREATER THAN 1% OF THE POWER UPRATE VALUES.
    c.) LOW PRESSURE TURBINE ROTOR REPLACEMENT (REF.: ECP 04-0070).
11. REROUTED PIPE FROM PIPING HAVING A DESIGN TEMPERATURE OF 575°F TO PIPING HAVING A DESIGN TEMPERATURE OF 550°F. ANALYSIS WAS PERFORMED AT 575°F. 575°F SHALL BE USED FOR CONSERVATISM.

302-0081-00000	FEEDWATER N27
302-0103-00000	CONDENSING - SYSTEM N21
302-0111-00000	HIGH PRESSURE HEATER DRAINS AND VENTS "A" N25
302-0183-00000	TURBINE PLANT SAMPLING SYSTEM P33
302-0642-00000	RESIDUAL HEAT REMOVAL E12
208-0025-00000	FEEDWATER CONTROL SYSTEM C34
808-0101-00000	CONDENSATE SYSTEM HOT SURGE TANK 3 ELEMENT
302-0971-00000	FEEDWATER LEAKAGE CONTROL SYSTEM N27
302-0222-00000	TURBINE BUILDING CLOSED COOLING SYSTEM P44

(REV. 21 10/2019)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

FEEDWATER
FIGURE 10.1-3 (SHEET 2 OF 2)
(DWG. D-302-0082-00000)



OPERATING DATA

SEE NOTES 6,7

#	PSIA	GPM	°F	REMARKS
1	VAC	11,251	101.1	RATED
2	190	22,502	101.3	RATED
3	124	22,502	101.3	RATED
4	124	200	101.3	RATED
5	114	22,308	102.4	RATED
6	95	11,129	104.3	RATED
7	352	11,122	104.9	RATED
8	330	7,415	104.9	RATED
9	319	7,522	157.2	RATED
10	308	7,700	219.1	RATED
11	308	23,100	219.1	RATED
12	293	11,923	288.6	RATED
13	105	23,847	288.6	
14	448	5,000	103.4	STARTUP (3500 MIN.)
15	12	1,000	103.4	INTERMITTENT
16	12	2,000	103.4	INTERMITTENT
17	20	1,000	65	INTERMITTENT
18	20	2,000	65	INTERMITTENT
19	50	60	104.3	

DESIGN DATA

#	NORMAL		UPSET			REMARKS
	PSIG	°F	PSIG	°F	TIME	
1	25&V	135	25&V	135		
2	250	140	250	140		
3	600	140	600	140		
4	600	320	600	320		
5	120	350	120	350		
6	50	140	50	140		
7	50	140	250	140		NOTE 4
8	25	140	25	140		

REFERENCES:

302-0083-00000	FEEDWATER N27
302-0102-00000	CONDENSATE TRANSFER AND STORAGE SYSTEM P11
302-0103-00000	CONDENSING SYSTEM N21
302-0106-00000	CONDENSATE FILTRATION SYSTEM N23
302-0107-00000	CONDENSATE DEMINERALIZER SYSTEM N24
302-0131-00000	CONDENSOR AIR REMOVAL SYSTEM N62
302-0141-00000	STEAM SEAL SYSTEM N33
302-0183-00000	TURBINE PLANT SAMPLING SYSTEM P33
302-0182-00000	TURBINE PLANT SAMPLING SYSTEM P33
302-0391-00000	CHEMICAL CLEANING OF CONDENSATE AND FEEDWATER SYSTEM P81
808-0101-00000	HOT SURGE TANK LOOP DIAGRAM
828E5250A	FEEDWATER ELEMENTARY DIAGRAM
302-0151-00000	CONDENSATE SEAL P12
302-0152-00000	CONDENSATE SEAL P12
808-0090-00000	CONDENSATE SYSTEM LOOP DIAGRAMS
208-0143-00000	CONDENSATE ELEMENTARY DIAGRAM
302-0113-00000	LOW PRESSURE HEATER, DRAINS, AND VENT
302-0871-00000	CONTROL ROD DRIVE HYDRAULIC SYSTEM C11
302-0081-00000	FEEDWATER SYSTEM N27
302-0041-00000	EXTRACTION STEAM SYSTEM N36
302-0126-00000	MAIN, REHEAT, EXTRACTION, AND MISC. DRAINS SYSTEM N22
302-0221-00000	TURBINE BLDG. CLOSED COOLING SYSTEM P44
302-0077-00000	HYDROGEN WATER CHEMISTRY SYSTEM P73
302-0104-00000	CONDENSATE FILTRATION SYSTEM N23

NOTES:

1. PIPING AND COMPONENTS MAY OR MAY NOT BE INSTALLED FOR THE TEMPORARY TEST OF FLOW NOZZLE N460 (COMMON TO UNIT 1 & 2).
2. ALL PANELS ARE PREFIXED 1H13- UNLESS OTHERWISE NOTED.
3. ALL DRAINS 1", VENTS 3/4" UNLESS OTHERWISE SPECIFIED.
4. DATA IN THE UPSET COLUMN ARE THE SYSTEM DESIGN CONDITIONS
5. VALVE P61F0005 HAS BEEN REMOVED FROM THE SYSTEM AND REPLACED WITH A SPOOL PIECE AND BLANKS. THIS INSTRUMENT IS ABANDONED IN PLACE.
6. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERTING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
7. OPERATING DATA IS TYPICALLY DERIVED FROM GE THERMAL KIT HEAT BALANCES. THE THERMAL KIT HEAT BALANCES ARE KEPT IN DESIGN INPUT RECORD (DIR) 237. OPERATING DATA SHOWN IS FOR RATED CONDITIONS APPLICABLE TO THE IMPLEMENTATION OF THE FOLLOWING PLANT CHANGES:
   a.) POWER UPRATE TO 105% OF THE ORIGINAL DESIGN (REF.: TAF 81794)
   b.) PARTIAL ARC ADMISSION (REF.: DCP 98-0050) NOTE:PARTIAL ARC PARAMETER CHANGES (UP & DOWN) ARE SHOWN ONLY IF THEY ARE GREATER THAN 1% OF THE POWER UPRATE VALUES.
   c.) LOW PRESSURE TURBINE ROTOR REPLACEMENT (REF.: ECP 04-0070)

(REV. 20 10/2017)

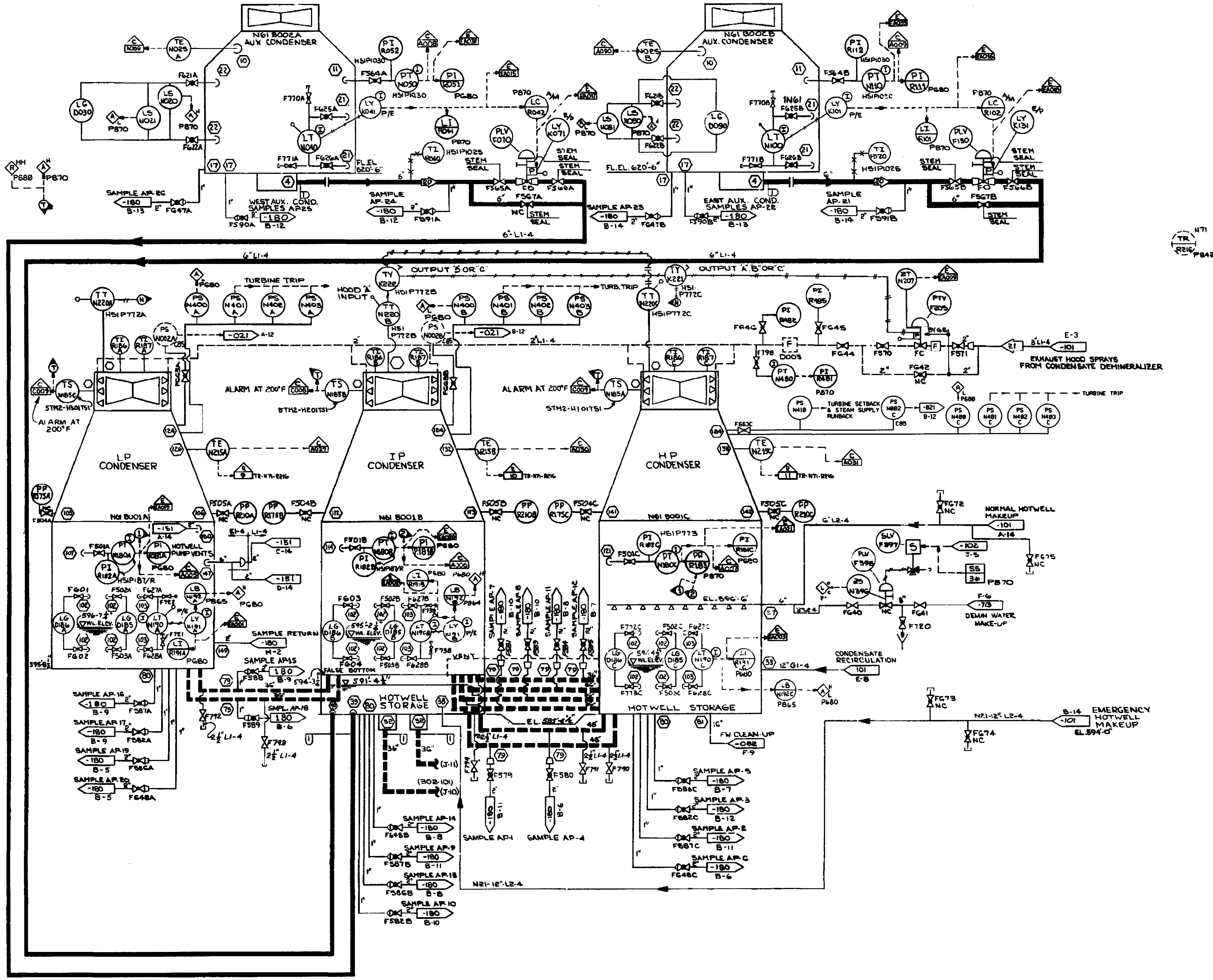
PERRY NUCLEAR POWER PLANT

10 CENTER RD., PERRY, OHIO 44081

CONDENSATE SYSTEM

FIGURE 10.1-4 (SHEET 1 OF 2)

(DWG. D-302-0101-00000)



OPERATING DATA (VWO) SEE NOTES 6, 7				
⇨	PSIA	GPM	°F	REMARKS
20	VAC	190	100	
21	286	138	101	LOW LOAD

DESIGN DATA						
P	NORMAL		UPSET			REMARKS
	PSIG	°F	PSIG	°F	TIME	
1	25 & V	135	25 & V	135		

NOTES:

1. CONDENSER SHOWN ON INGERSOLL-RAND DRAWING N4-WRGB4501X1.
2. EXHAUST HOOD SPRAY CONTROLS ARE SHOWN ON G.E. TURBINE DWG. 11802612.
3. ALL INSTRUMENTS AND CONTROLS CARRY PREFIX 1N21, UNLESS OTHERWISE SPECIFIED.
4. ALL PANELS ARE PREFIXED 1H13, UNLESS OTHERWISE NOTED.
5. AUXILIARY CONDENSER ARRANGEMENT SHOWN ON INGERSOLL-RAND DRAWING E4-16 C11-501X1.
6. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
7. OPERATING DATA IS TYPICALLY DERIVED FROM GE THERMAL KIT HEAT BALANCES. THE THERMAL KIT HEAT BALANCES ARE KEPT IN DESIGN INPUT RECORD (DIR) 237. OPERATING DATA SHOWN IS FOR RATED CONDITIONS APPLICABLE TO THE IMPLEMENTATION OF THE FOLLOWING PLANT CHANGES:
   a.) POWER UPRATE TO 105% OF THE ORIGINAL DESIGN (REF.: TAF 81794)
   b.) PARTIAL ARC ADMISSION (REF.: DCP 98-8050)
   NOTE: PARTIAL ARC PARAMETER CHANGES (UP & DOWN) ARE SHOWN ONLY IF THEY ARE GREATER THAN 1% OF THE POWER UPRATE VALUES.

REFERENCES:

302-0011-00000	MAIN STEAM SYSTEM N11
302-0082-00000	FEEDWATER N27
302-0101-00000	CONDENSATE SYSTEM N21
302-0102-00000	CONDENSATE TRANSFER AND STORAGE SYSTEM P11
302-0151-00000	CONDENSATE SEAL P12
302-0160-00000	TURBINE PLANT SAMPLING SYSTEM P33
302-0713-00000	MIXED-BED DEMINERALIZER AND DISTRIBUTION SYSTEM, MIXED-BED EXCHANGER, STORAGE AND NORTH ZONE DISTRIBUTION P22
302-0021-00000	STEAM BYPASS AND PRESSURE REGULATION SYSTEM C85
802-0009-00000	REACTOR - TURBINE GENERATOR TRIP DIAGRAM
761E906	OFF-GAS - LOW TEMPERATURE P&ID
11802612	TURBINE CONTROL DIAGRAM G.E.T.

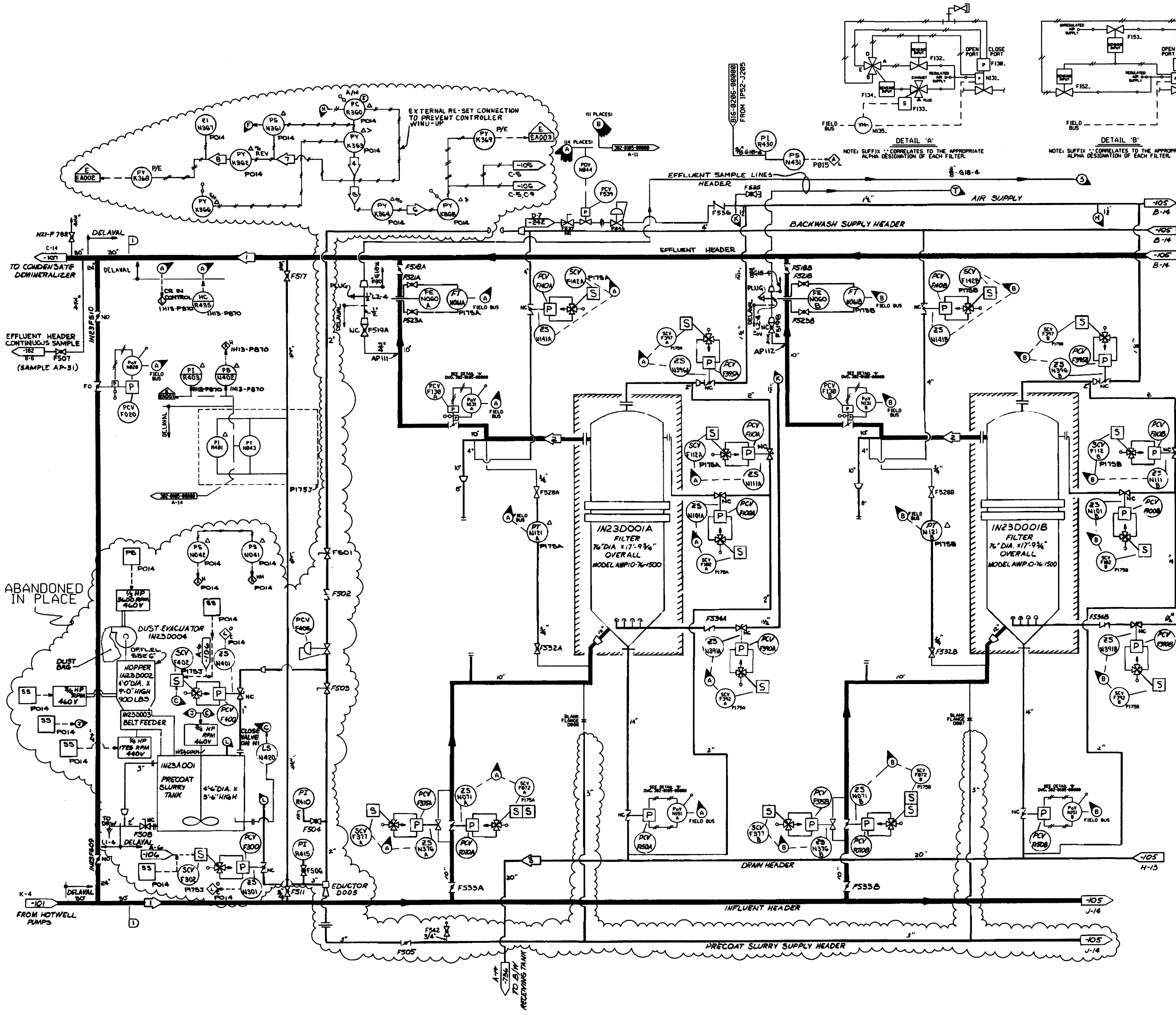
(REV. 19 10/2015)

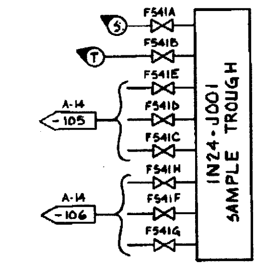
PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

CONDENSATE SYSTEM

FIGURE 10.1-4 (SHEET 2 OF 2)

(DWG. D-302-0103-00000)





OPERATING DATA

SEE NOTES 8, 9

#	PSIG	GPM	°F	REMARKS
1	145-175	22,502	101.1	NORMAL
1	175	25,427	140	MAX. FLOW
2	145-175	3,215	101.3	NORMAL
2	175	3633	140	MAX. FLOW
3	100	10,000	101.3	0.2 MIN. DURATION
4	3-15	-		
5	3-9	-		
6	3-15	-		
7	9-15	-		
8	15-3	-		

DESIGN DATA

P	NORMAL		UPSET			REMARKS
	PSIG	°F	PSIG	°F	TIME	
1	250	105	250	140		

NOTES:

1. ALL PANELS AND RACKS ARE PREFIXED 1H51, UNLESS OTHERWISE NOTED.
2. DELETED
3. DELETED
4. DELETED
5. ALL FILTERS AND PRECOAT EQUIPMENT EXCEPT HOPPER STAND ON FLOOR EL.568'-6" (REF.).
6. ALL EXTERNAL PIPING, EXCEPT SAMPLE TUBING, IS CARBON STEEL.
7. TYPE "B" SAMPLE CONNECTION AS SHOWN ON DWG. 302-0771-00000.
8. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
9. OPERATING DATA IS TYPICALLY DERIVED FROM GE THERMAL KIT HEAT BALANCES. THE THERMAL KIT HEAT BALANCES ARE KEPT IN DESIGN INPUT RECORD (DIR) 237. OPERATING DATA SHOWN IS FOR RATED CONDITIONS APPLICABLE TO THE IMPLEMENTATION OF THE FOLLOWING PLANT CHANGES:
   a.) POWER UPRATE TO 105% OF THE ORIGINAL DESIGN (REF.: TAF 81794)
   b.) PARTIAL ARC ADMISSION (REF.: DCP 98-0050)
   NOTE: PARTIAL ARC PARAMETER CHANGES (UP & DOWN) ARE SHOWN ONLY IF THEY ARE GREATER THAN 1% OF THE POWER UPRATE VALUES.
   c.) LOW PRESSURE TURBINE ROTOR REPLACEMENT (REF.: ECP 04-0070).

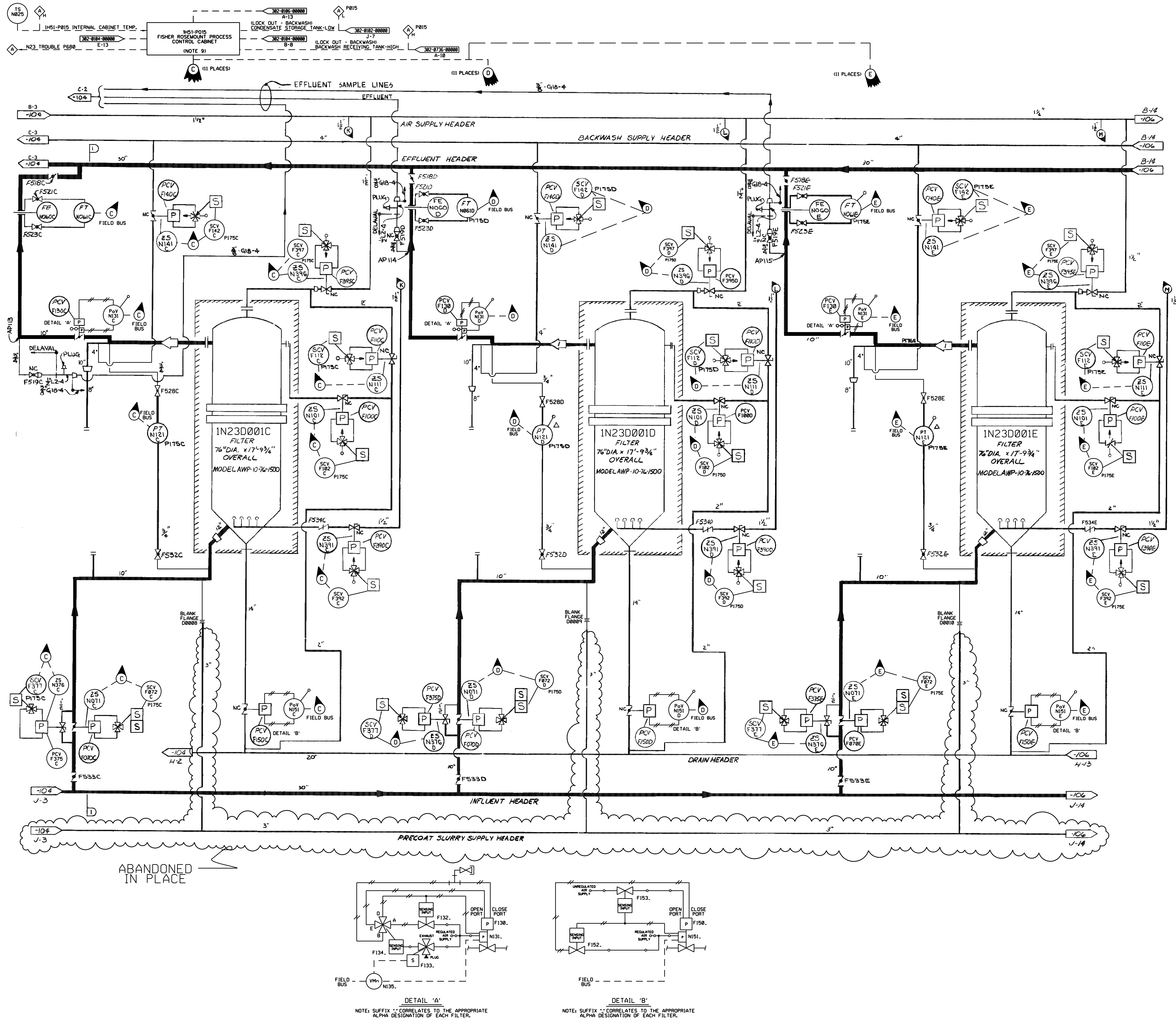
REFERENCES:

302-0101-00000	CONDENSATE SYSTEM N21
302-0105-00000	CONDENSATE FILTRATION SYSTEM N23
302-0106-00000	CONDENSATE FILTRATION SYSTEM N23
302-0107-00000	CONDENSATE DEMINERALIZER SYSTEM N24
302-0182-00000	TURBINE PLANT SAMPLING SYSTEM P33
302-0736-00000	LRW - TANKS AND PUMPS FOR HANDLING CONDENSATE BACKWASH SLURRY G50

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

CONDENSATE FILTRATION SYSTEM
FIGURE 10.1-5 (SHEET 1 OF 3)
(DWG. D-302-0104-00000)



OPERATING DATA
SEE NOTES 7, 8

#	PSIG	GPM	°F	REMARKS
1	145-175	3,215	101.3	NORMAL
1	175	3633	140	MAX.

DESIGN DATA

#	NORMAL		UPSET			REMARKS
	PSIG	°F	PSIG	°F	TIME	
1	250	105	250	140		

REFERENCES:

302-0104-00000 CONDENSATE FILTRATION SYSTEM N23

302-0106-00000 CONDENSATE FILTRATION SYSTEM N23

NOTES:

1. ALL PANELS & RACKS ARE PREFIXED 1H51, UNLESS OTHERWISE SPECIFIED.
2. DELETED
3. DELETED
4. DELETED
5. ALL FILTERS STAND ON FLOOR EL. 568'-6" (REF.).
6. ALL EXTERNAL PIPING EXCEPT SAMPLE TUBING IS CARBON STEEL.
7. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
8. OPERATING DATA IS TYPICALLY DERIVED FROM GE THERMAL KIT HEAT BALANCES. THE THERMAL KIT HEAT BALANCES ARE KEPT IN DESIGN INPUT RECORD (DIR) 237. OPERATING DATA SHOWN IS FOR RATED CONDITIONS APPLICABLE TO THE IMPLEMENTATION OF THE FOLLOWING PLANT CHANGES:
   a.) POWER UPRATE TO 105% OF THE ORIGINAL DESIGN (REF.: TAF 81794)
   b.) PARTIAL ARC ADMISSION (REF.: DCP 98-0050)
   NOTE: PARTIAL ARC PARAMETER CHANGES (UP & DOWN) ARE SHOWN ONLY IF THEY ARE GREATER THAN 1% OF THE POWER UPRATE VALUES.
   c.) LOW PRESSURE TURBINE ROTOR REPLACEMENT (REF.: ECP 04-0070).
9. THE CONTROL AND MONITORING OF EACH FILTER UNIT IS COMPLETED WITHIN THE FISHER ROSEMOUNT CONTROL PROCESSOR. ALL OPERATOR INPUT / OUTPUT INTERFACING IS CONDUCTED THROUGH A MONITOR AND KEYBOARD AT THE 1H51P015 PANEL.
10. FXXX_ - VALVE IDENTIFICATION NUMBER ("_" REPRESENTING LETTER DESIGNATION).

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PERRY NUCLEAR POWER PLANT
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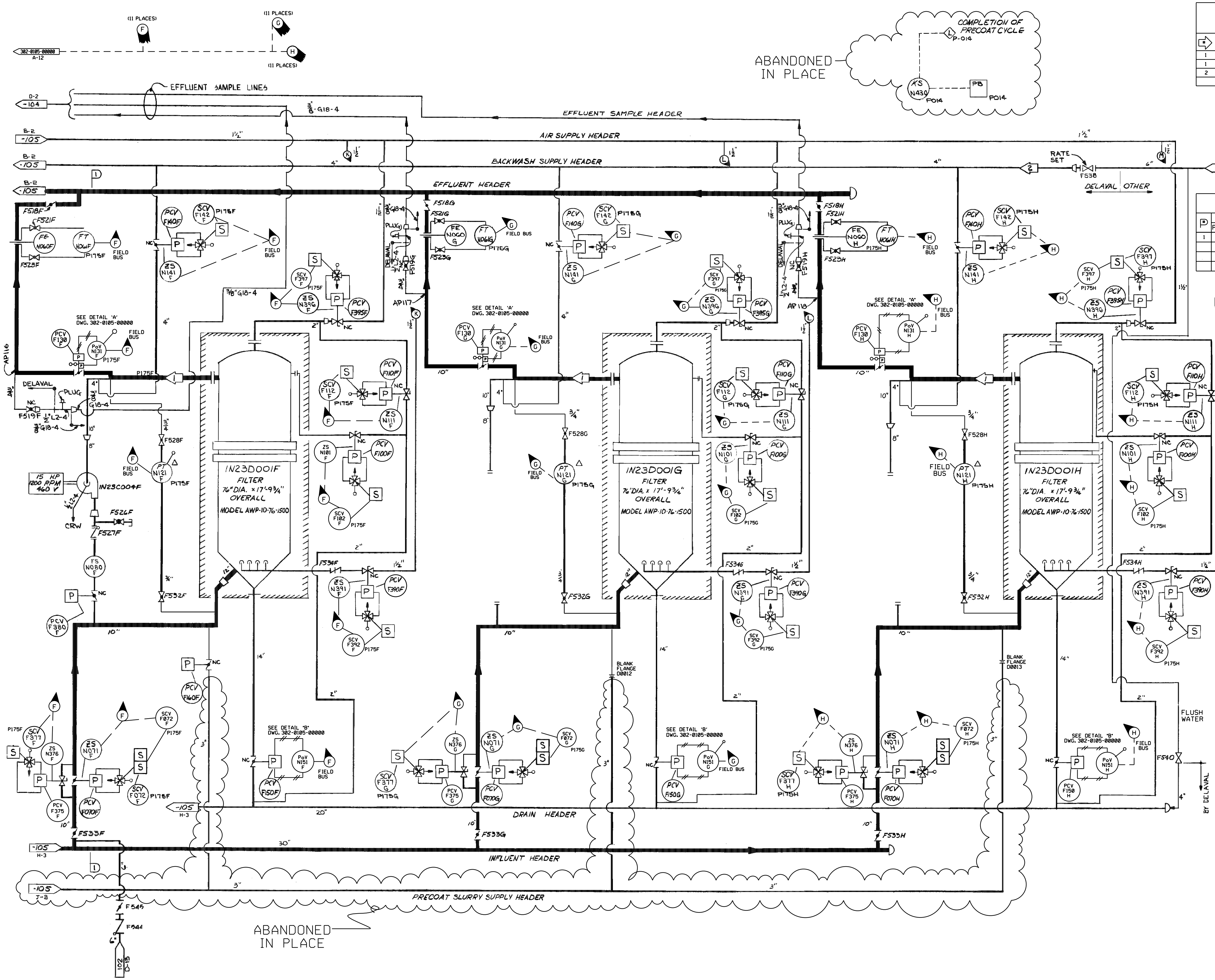
CONDENSATE FILTRATION SYSTEM

FIGURE 10.1-5 (SHEET 2 OF 3)
(DWG. D-302-0105-00000)



OPERATING DATA

SEE NOTES 8, 9

#	PSIG	GPM	°F	REMARKS
1	145-175	3,215	101.3	NORMAL
1	250	3633	140	MAX.
2	30	479	105	INTERMITTENT (4.4 MIN.)

DESIGN DATA

#	NORMAL		UPSET			REMARKS
	PSIG	°F	PSIG	°F	TIME	
1	250	105	250	140		

REFERENCES:

302-0102-00000	CONDENSATE TRANSFER AND STORAGE SYSTEM P11
302-0104-00000	CONDENSATE FILTRATION SYSTEM N23
302-0105-00000	CONDENSATE FILTRATION SYSTEM N23
302-0241-00000	SERVICE AND INSTRUMENT AIR SUPPLY P51 & P52
302-0736-00000	LRW - TANKS AND PUMPS FOR BACKWASH SLURRY G50
302-0771-00000	NUCLEAR SAMPLING SAMPLE P34

NOTES:

1. ALL PANELS & RACKS ARE PREFIXED 1H51, UNLESS OTHERWISE SPECIFIED.
2. DELETED
3. DELETED
4. DELETED
5. ALL FILTERS STAND ON FLOOR EL. 568'-6" (REF.).
6. ALL EXTERNAL PIPING EXCEPT SAMPLE TUBING IS CARBON STEEL.
7. DELETED
8. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
9. OPERATING DATA IS TYPICALLY DERIVED FROM GE THERMAL KIT HEAT BALANCES. THE THERMAL KIT HEAT BALANCES ARE KEPT IN DESIGN INPUT RECORD (DIR) 237. OPERATING DATA SHOWN IS FOR RATED CONDITIONS APPLICABLE TO THE IMPLEMENTATION OF THE FOLLOWING PLANT CHANGES:
   a.) POWER UPRATE TO 105% OF THE ORIGINAL DESIGN (REF.: TAF 81794)
   b.) PARTIAL ARC ADMISSION (REF.: DCP 98-0050)
   NOTE: PARTIAL ARC PARAMETER CHANGES (UP & DOWN) ARE SHOWN ONLY IF THEY ARE GREATER THAN 1% OF THE POWER UPRATE VALUES.
   c.) LOW PRESSURE TURBINE ROTOR REPLACEMENT (REF.: ECP 04-0070)

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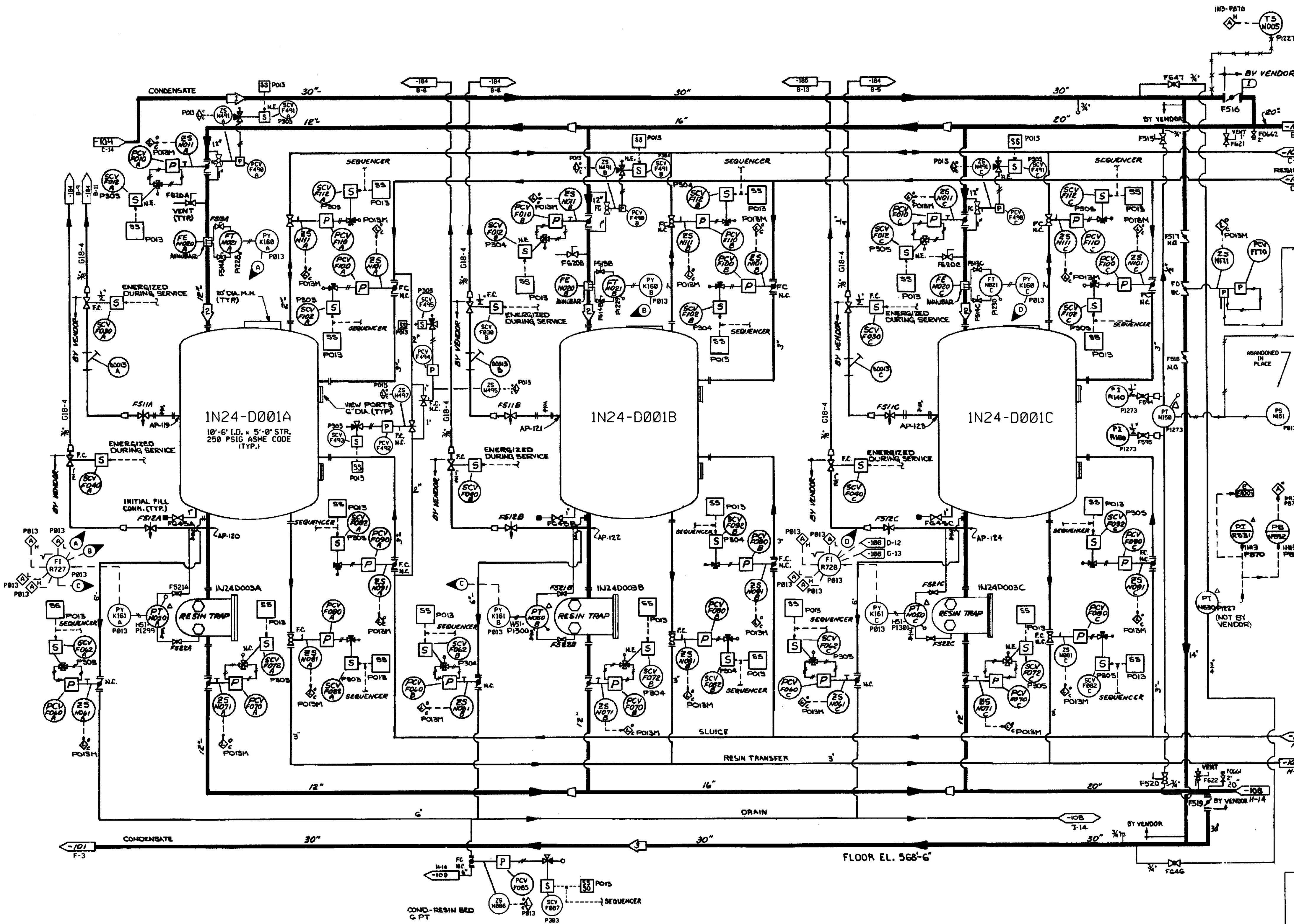
PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

CONDENSATE FILTRATION SYSTEM

FIGURE 10.1-5 (SHEET 3 OF 3)
(DWG. D-302-0106-00000)

OPERATING DATA SEE NOTES 4,5				
⇨	PSIG	GPM	°F	REMARKS
1	175	22,502	101.3	
2	175	0/4,500	101.3	
3	110	22,502	101.3	



DESIGN DATA						
P	NORMAL		UPSET			REMARKS
	PSIG	°F	PSIG	°F	TIME	
1	250	105	250	140		
2	250	105	250	140		

NOTES:

1. ALL PANELS AND RACKS ARE PREFIXED 1H51, UNLESS OTHERWISE NOTED.
2. VALVE STATUS LIGHTS WITH SUFFIX "M" ARE LOCATED ON MIMIC.
3. ALL ALARMS ARE ANNUNCIATED AS SYSTEM TROUBLE ON 1H13P0680.
4. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
5. OPERATING DATA IS TYPICALLY DERIVED FROM GE THERMAL KIT HEAT BALANCES. THE THERMAL KIT HEAT BALANCES ARE KEPT IN DESIGN INPUT RECORD (DIR) 237. OPERATING DATA SHOWN IS FOR RATED CONDITIONS APPLICABLE TO THE IMPLEMENTATION OF THE FOLLOWING PLANT CHANGES:
   a.) POWER UPRATE TO 105% OF THE ORIGINAL DESIGN (REF.: TAF 81794)
   b.) PARTIAL ARC ADMISSION (REF.: DCP 98-0050)
   NOTE: PARTIAL ARC PARAMETER CHANGES (UP & DOWN) ARE SHOWN ONLY IF THEY ARE GREATER THAN 1% OF THE POWER UPRATE VALUES.
   c.) LOW PRESSURE TURBINE ROTOR REPLACEMENT (REF.: ECP 04-0070)

REFERENCES:

302-0101-00000	CONDENSATE SYSTEM N21
302-0104-00000	CONDENSATE FILTRATION SYSTEM N23
302-0108-00000	CONDENSATE DEMINERALIZER SYSTEM N24
302-0184-00000	TURBINE PLANT SAMPLING SYSTEM P33
302-0185-00000	TURBINE PLANT SAMPLING SYSTEM P33

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PERRY NUCLEAR POWER PLANT
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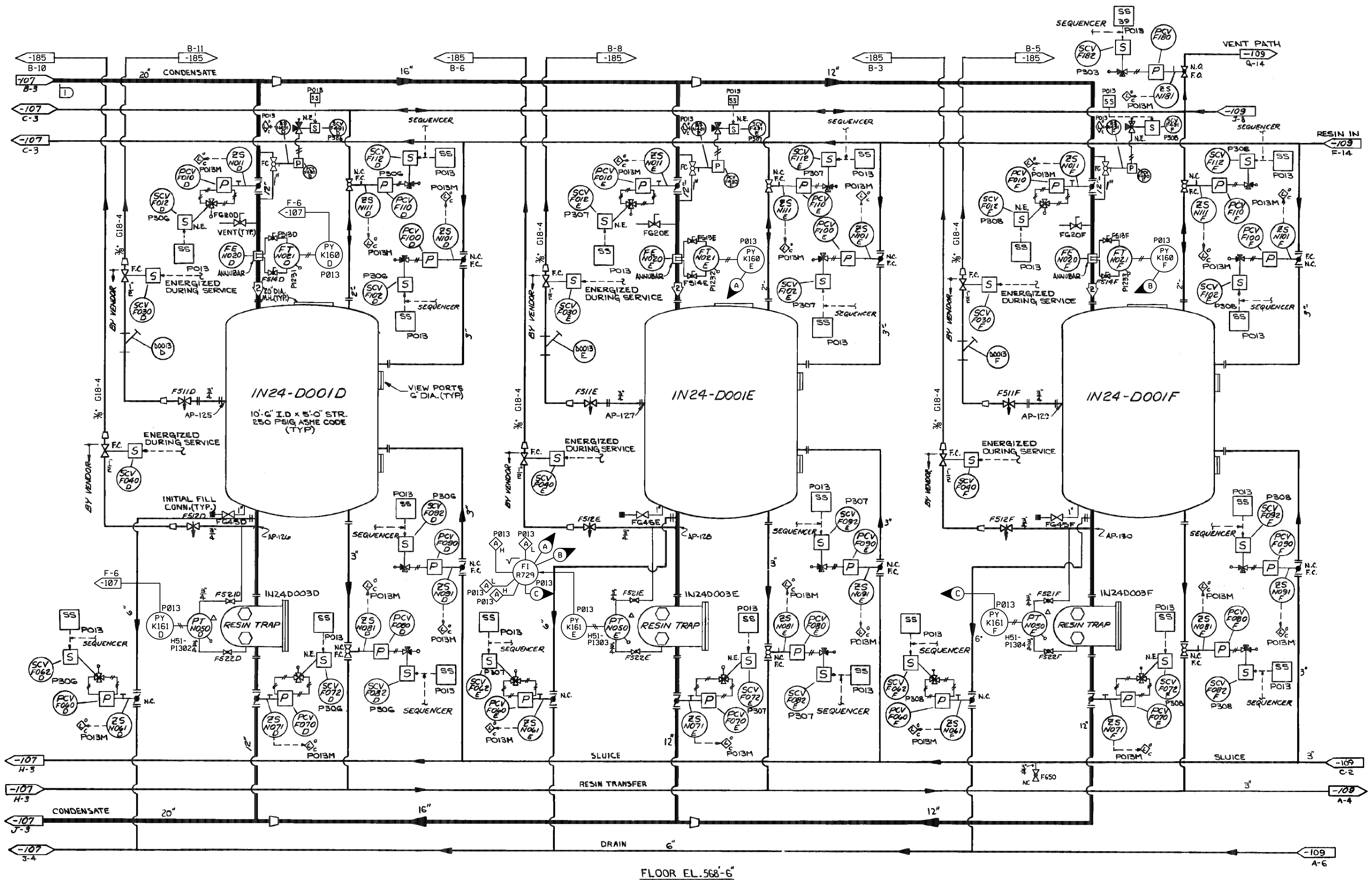
CONDENSATE DEMINERALIZER SYSTEM
FIGURE 10.1-6 (SHEET 1 OF 4)
(DWG. D-302-0107-00000)



OPERATING DATA

SEE NOTE 1

#	PSIG	GPM	°F	REMARKS
2	175	0/4,500	101.3	

DESIGN DATA

#	NORMAL		UPSET			REMARKS
	PSIG	°F	PSIG	°F	TIME	
1	250	105	250	140		

REFERENCES:

302-0107-00000 CONDENSATE DEMINERALIZER SYSTEM N24

302-0109-00000 CONDENSATE DEMINERALIZER SYSTEM N24

302-0185-00000 TURBINE PLANT SAMPLING SYSTEM P33

NOTES:

1. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
2. OPERATING DATA IS TYPICALLY DERIVED FROM GE THERMAL KIT HEAT BALANCES. THE THERMAL KIT HEAT BALANCES ARE KEPT IN DESIGN INPUT RECORD (DIR) 237. OPERATING DATA SHOWN IS FOR RATED CONDITIONS APPLICABLE TO THE INPLEMENTATION OF THE FOLLOWING PLANT CHANGES:
   a.) LOW PRESSURE TURBINE ROTOR REPLACEMENT (REF.: ECP 04-0070)

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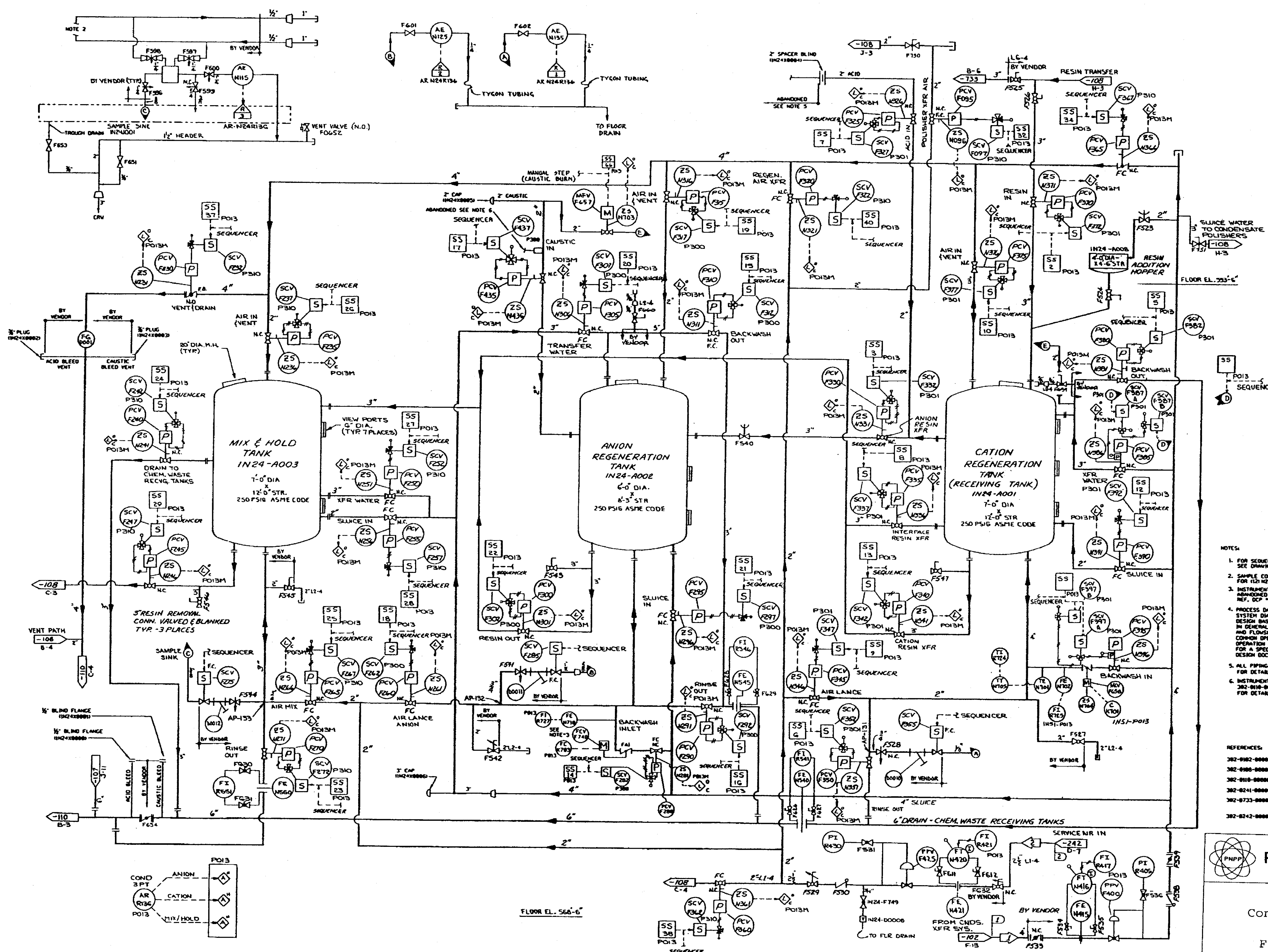
PERRY NUCLEAR POWER PLANT

10 CENTER RD., PERRY, OHIO 44081

CONDENSATE DEMINERALIZER SYSTEM

FIGURE 10.1-6 (SHEET 2 OF 4)

(DWG. D-302-0108-00000)



OPERATING DATA

SEE NOTE 4

⇨	PSIG	GPM	F	By	REMARKS
1	50 MIN	9459	100	JG	
2	60	400	AMB	JG	

DESIGN DATA

⇨	NORMAL PSIG	NORMAL F	UPSET PSIG	UPSET F	UPSET TIME	By		REMARKS
1	150	100						
2	125	AMB.						

NOTES:

1. FOR SEQUENCE TIMERS 1N24R700 THROUGH 1N24R723, SEE DRAWING 208-0146-00000.
2. SAMPLE COOLER RACK 1N24J001 IS ABANDONED IN PLACE FOR (12) N24 BED AND EFFLUENT SAMPLES
3. INSTRUMENTS LEFT ENERGIZED, VALVE & INSTRUMENTS ABANDONED IN PLACE (FI 727, FE N710 & FC K703) REF. DCP #060330.
4. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
5. ALL PIPING/TUBING THIS SIDE OF ISOLATION IS ABANDONED. FOR DETAILS, SEE TECHNICAL ASSIGNMENT FILE 81777.
6. INSTRUMENT AE-N825 WAS INADVERTENTLY SHOWN ON DWG. 302-0110-00000. HOWEVER, IT IS NOW ABANDONED IN PLACE. FOR DETAILS, SEE TECHNICAL ASSIGNMENT FILE 81777.

REFERENCES:

302-0102-00000	CONDENSATE TRANSFER AND STORAGE SYSTEM P11
302-0108-00000	CONDENSATE DEMINERALIZER SYSTEM N24
302-0110-00000	CONDENSATE DEMINERALIZER SYSTEM N24
302-0241-00000	SERVICE AND INSTRUMENT AIR SUPPLY P51 AND P52
302-0733-00000	CHEMICAL WASTE TANKS AND WASTE EVAPORATOR / CONDENSER G51
302-0242-00000	SERVICE AIR DISTRIBUTION SYSTEM, P51

(Rev. 15 10/07)

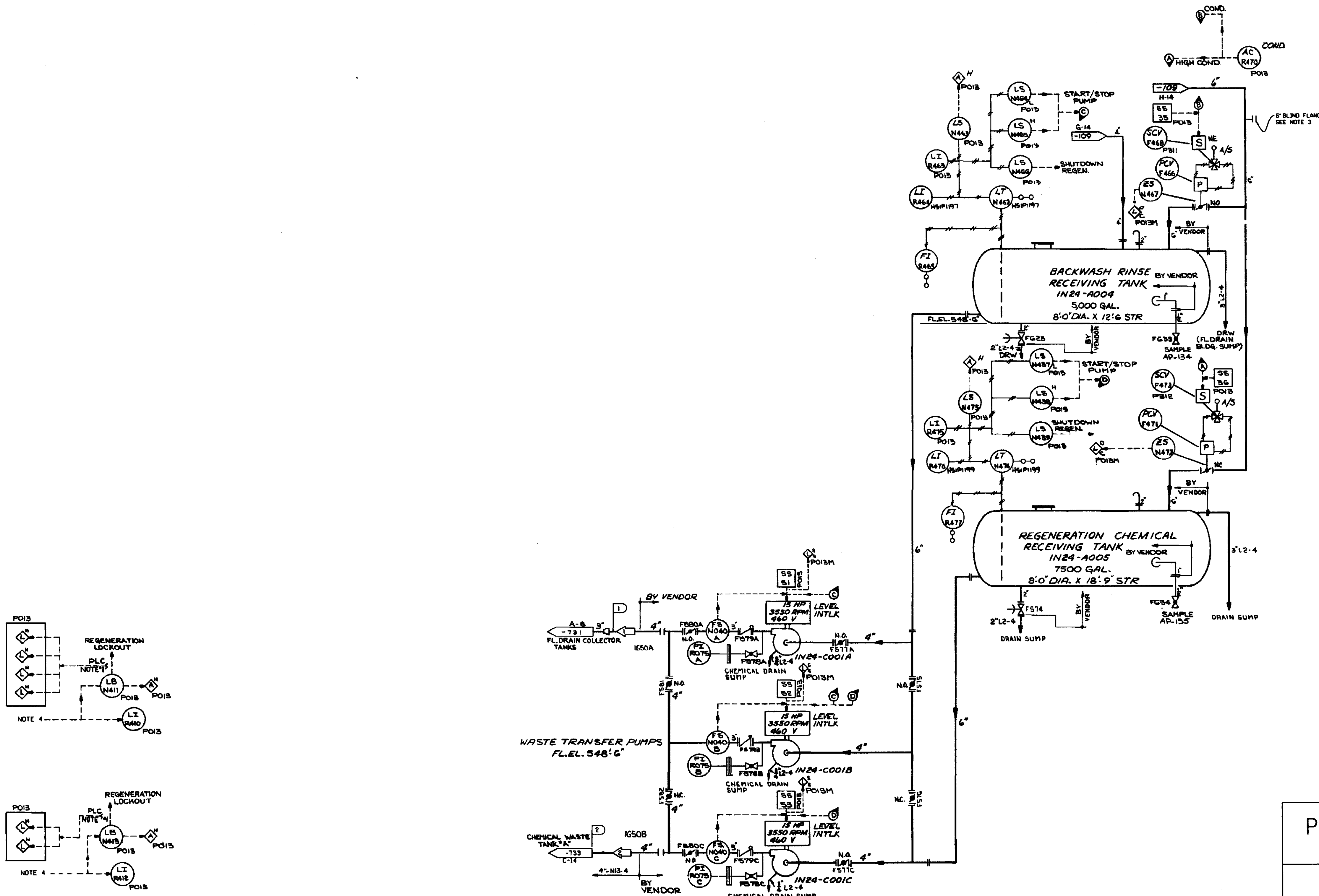
PNPP

PERRY NUCLEAR POWER PLANT

Condensate Demineralizer System

Figure 10.1-6 (Sheet 3 of 4)

(Dwg. D-302-109)



OPERATING DATA

SEE NOTE 2

	PSIG	GPM	F	BY	REMARKS
1	60	200	120°		
2	60	200	120°		

DESIGN DATA

	NORMAL PSIG	NORMAL F	UPSET PSIG	UPSET F	TIME			REMARKS
1	0/60	120	80	120	—			
2	0/60	120	80	120	—			

NOTES:

1. G-50 LIQUID RADWASTE SYSTEM PLC IS INACTIVE.
2. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
3. CONDUCTIVITY CELL PY-1N24N469 REMOVED FROM SYSTEM. CONDUCTIVITY REC. PY-1N24R470 SPARED IN COND. STO. DEMIN. CONTROL PANEL 1H51P0013.
4. ANALOG SIGNALS FROM G-50 LIQUID RADWASTE SYSTEM ARE INACTIVE.

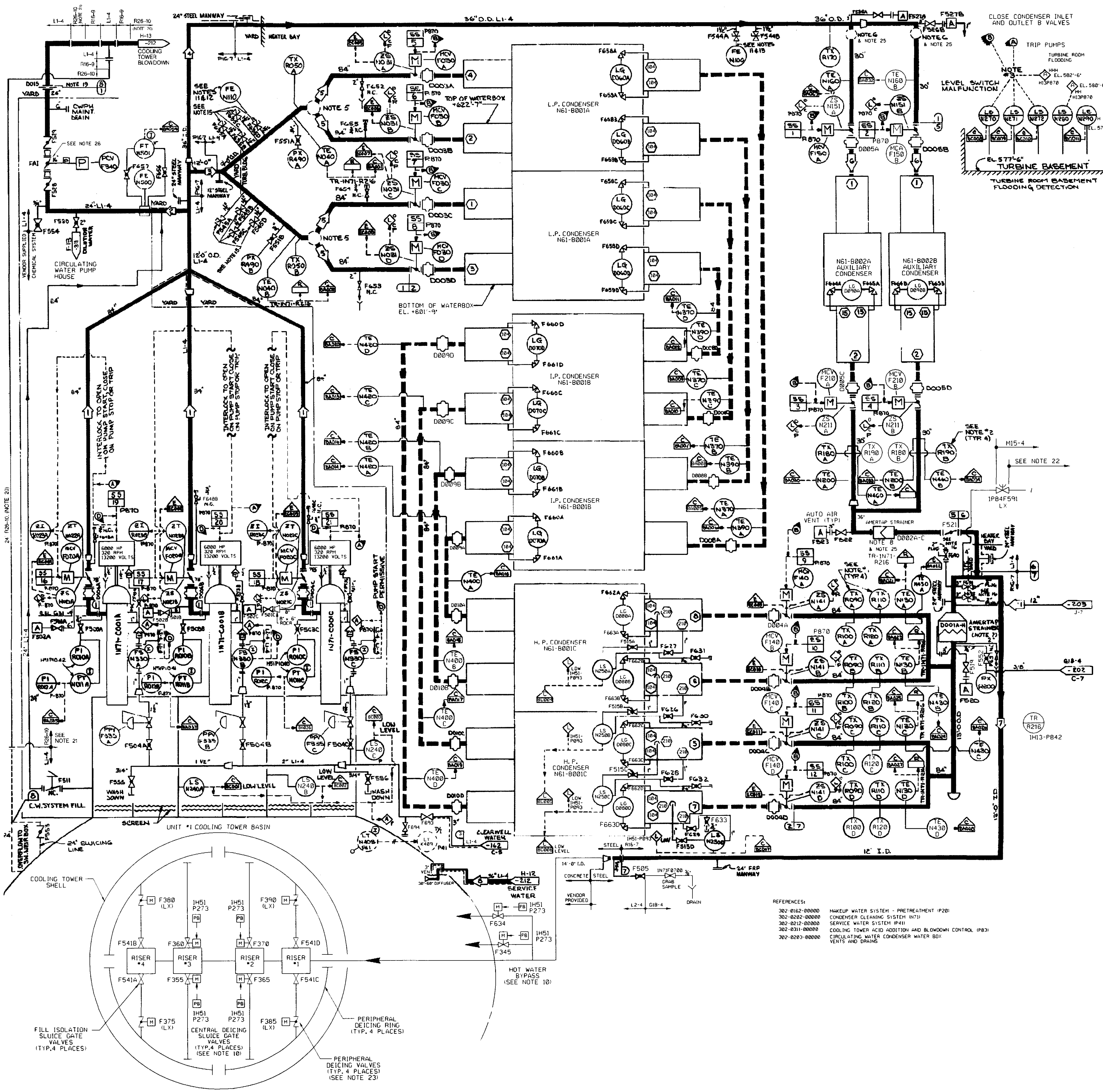
REFERENCES:

302-0109-00000	CONDENSATE DEMINERALIZER SYSTEM N24
302-0731-00000	LRW - FLOOR DRAIN COLLECTOR TANKS AND WASTE COLLECTOR TANKS G50
302-0733-00000	LRW - CHEMICAL WASTE TANKS AND SPENT RESIN TRANSFER PUMPS G50

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

CONDENSATE DEMINERALIZER SYSTEM
FIGURE 10.1-6 (SHEET 4 OF 4)
(DWG. D-302-0110-00000)



REFERENCES:

302-0162-00000	MAKEUP WATER SYSTEM - PRETREATMENT (P20)
302-0202-00000	CONDENSER CLEANING SYSTEM (N71)
302-0212-00000	SERVICE WATER SYSTEM (P41)
302-0311-00000	COOLING TOWER ACID ADDITION AND BLOWDOWN CONTROL (P83)
302-0203-00000	CIRCULATING WATER CONDENSER WATER BOX VENTS AND DRAINS

OPERATING DATA *

SEE NOTE 24

#	PSIG	GPM	°F	REMARKS
1	44 58	192,124 576,373	48° TO 96°	PUMP DISCHARGE WYE 1
2	56	10,300	48° TO 96°	WYE 1 (T.O.P.) 6,600 GPM-JAN.
3	52 50	566,073 536,147	48° TO 96°	TEE 1 WYE 2
4	52 40	566,073 29,926	48° TO 96°	TEE 1 TEE 5
5	50 52	268,073 134,037	48° TO 96°	WYE 3 & 4 COND. INLET A & D
6	43	14,963	48° TO 96°	AUX. COND. INLET 2A & 2B
7	34 31 30 27	30,004 540,101 570,093 570,093	80° TO 128°	36" FRP LOW POINT 144" STEEL/FRP 36" X 144" TEE 4 YARD FRP TO TOWER CONCRETE
8	5	25,980	88	15,778 GPM - FEB.
11	40	3,000	48° TO 126°	CONDENSER MAINT.
12	25	23	35° TO 81.5°	BEARING & STUFFING BOX
13	25	3	35° TO 81.5°	UPPER BEARING

* OPERATING DATA IS BASED ON CASE 1 OF CALCULATION N71-001 (3 PUMPS, NORMAL SYSTEM LINEUP).

DESIGN DATA

P	** NORMAL		UPSET ***			REMARKS
	PSIG	°F	PSIG	°F	TIME	
1	58	96	83	96	<1%	UPSET AT PUMP SHUTOFF
2	52	128	78	128	<1%	UPSET AT PUMP SHUTOFF
3	100	80	125	80	<1%	CLEARWELL WATER FROM P20 SYSTEM
5	44	108	70	108	<1%	UPSET AT PUMP SHUTOFF
6	23	108	23	108	<1%	
7	35	128	35	128	<1%	
8	5	96	5	96	<1%	13988 GPM (MAX) SEE NOTE 19

** DESIGN CONDITIONS APPLICABLE TO NORMAL SYSTEM OPERATION ARE BASED ON CASE 2 OF CALCULATION N71-001 (3 PUMPS, ONE ISOLATED CONDENSER TRAIN).

*** BOUNDING (WORST CASE) DESIGN CONDITIONS ARE INDICATED IN THE UPSET DESIGN DATA COLUMN (3 PUMPS AT SHUT OFF HEAD CONDITIONS).

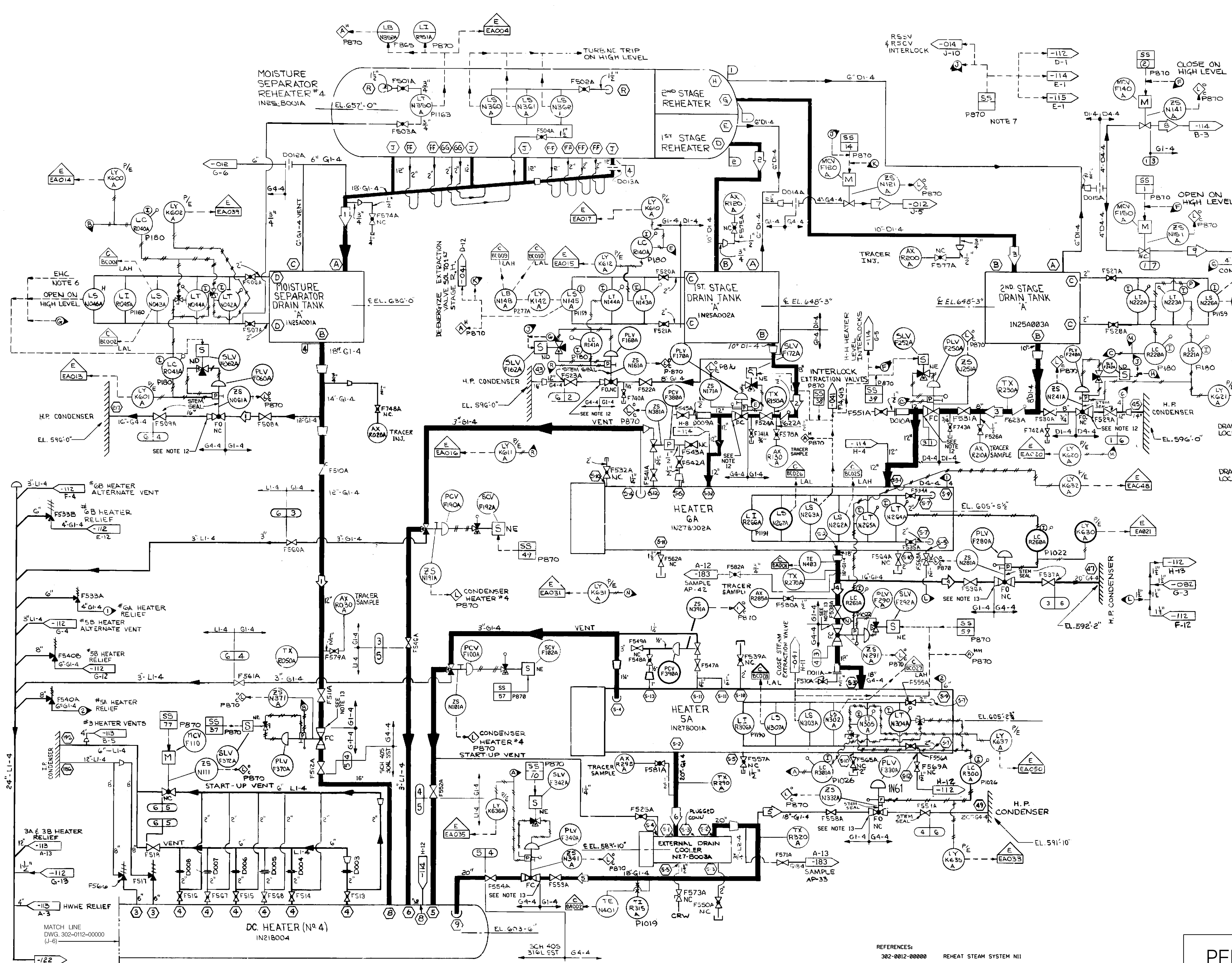
NOTES:

1. FOUR TX'S LOCATED RADIALLY ON THE SAME PLANE.
2. TWO TX'S LOCATED RADIALLY ON THE SAME PLANE.
3. TWO OUT OF THREE.
4. DIFFUSER PIPE.
5. AMERTAP BALL INJECTION. SEE DWG. 302-0202-00000 (D-5).
6. AMERTAP BALL INJECTION. SEE DWG. 302-0202-00000 (G-4 AND G-6).
7. AMERTAP BALL EXTRACTION. SEE DWG. 302-0202-00000 (D-8 AND D-9).
8. AMERTAP BALL EXTRACTION. SEE DWG. 302-0202-00000 (J-13).
9. ALL INSTRUMENTS AND CONTROLS DESIGNATED P- TO BE MOUNTED ON PANEL H13P0870, UNLESS OTHERWISE NOTED.
10. EACH VALVE HAS A PAIR OF LIMIT SWITCHES FOR OPERATING STATUS LIGHTS ON PANEL 1H51P0273. LIMIT SWITCHES ARE NUMBERED "NKXXX+1)", WHERE "XXX" IS THE NUMERICAL PORTION OF THE VALVE NUMBERS.
11. THE PITOT TUBES, FOR USE WITH TEST MONOMETERS ARE USED FOR FLOW TESTING IN BOTH UNITS AND ARE NOT PERMANENTLY INSTALLED. THEY HAVE PREFIX 0N71-.
12. TYPICAL AT VALVES F0635A, F0635B, F0635C, F0635D, F0545A, F0545B, F0545C AND F0545D.
13. TYPICAL AT VALVES F0544A AND F0544B.
14. FOR CIRCULATING WATER PUMP AND MOTOR SUPERVISORY THERMOCOUPLES, SEE DWG. 808-0200-00000.
15. F0545A, F0545B, F0545C, F0545D, F0635A, F0635B, F0635C AND F0635D CORPORATION COCKS ARE INSTALLED WITH PLUGS TO PREVENT LEAKS.
16. PENETRATION THRU 12'-0" DIA. PIPE WALL IS 2" DIA. USED FOR PITOT TUBES.
17. AUTO VENTS INSTALLED IN THIS SYSTEM THAT DO NOT HAVE AN ASSOCIATED HARD PIPED DISCHARGE LINE MAY UTILIZE A FLEXIBLE (TYGON/RUBBER) HOSE, IF DESIRED, TO DISCHARGE TO A CONVENIENT FLOOR DRAIN.
18. DELETED.
19. VERTICAL CARBON STEEL PIPING L1-4 DOWNSTREAM OF A0-D0015 IS SUBJECT TO VACUUM CONDITIONS OF 9.9 PSIA, MINIMUM.
20. EXISTING FRP PIPE HAS BEEN LINED WITH CURED-IN-PLACE PIPE (LINE SPEC. RR26-10). INVERSION POINT FOR INSTALLATION OF CIPP UTILIZES STEEL PIPE TEE AND FLANGES (L1-4) AND NEW FRP FLANGES/PIPE (R16-9).
21. THE CIPP WILL EXTEND INTO THE STEEL PIPE WHERE END SEALS ARE MADE.
22. ALL PIPING/TUBING ON THIS SIDE OF ISOLATION IS ABANDONED. FOR DETAILS, SEE TECHNICAL ASSIGNMENT FILE 81777.
23. PERIPHERAL DEICE PIPING DOWNSTREAM OF ISOLATION VALVES HAVE BEEN ABANDONED IN PLACE (REFERENCE SMRF 97-5098).
24. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM IS APPROXIMATE AND SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED. REFER TO THE N71 SYSTEM PROTO-FLO MODEL CONTAINED IN CALCULATION N71-001.
25. AUXILIARY CONDENSER AMERTAP NO LONGER USED. SEE DCP 99-5050 AND TAF 81777.
26. VALVE 1N71F0340 WILL BE CONTROLLED MANUALLY. THE PRESSURE ACTIVATED CONTROLS HAVE BEEN DIABLED.

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

CIRCULATING WATER SYSTEM
FIGURE 10.1-7
(DWG. D-302-0201-00000)



DRAIN VALVE INTER-LOCK AT 20% LOAD -012 H-11

DRAIN VALVE INTER-LOCK AT 10% LOAD -012 H-11

OPERATING DATA (RATED)

SEE NOTES 10, 11

#	PSIA	LB/HR	°F	REMARKS
1	191	421,716	378	
2	552	178,050	477	
3	966	159,496	540	
4	344	1,143,886	382	
5	185	1,526,419	339	
6	185	1,526,419	339	
7	552	17,805	477	
8	362	15,950	435	
9	529	15,453	474	

DESIGN DATA

#	NORMAL PSIG	NORMAL °F	UPSET PSIG	UPSET °F	UPSET TIME	REMARKS
1	1250	575	NA	NA	NA	
2	600	492	NA	NA	NA	
3	400	450	NA	NA	NA	
4	200	385	NA	NA	NA	
5	120	350	NA	NA	NA	
6	50	380	NA	NA	NA	
7	550	500	NA	NA	NA	

NOTES:

1. VENT ORIFICES ON HEATER 5 AND 6 ARE INTERNAL.
2. FEEDWATER HEATERS SHOWN ON FOSTER-WHEELER DRAWINGS.
3. DC HEATER SHOWN ON CHICAGO HEATER DWG. D-3536.
4. MANUAL HEATER DRAINS ARE PIPED TO CONDENSER.
5. ALL PANEL AND RACKS ARE PREFIXED 1H13, UNLESS OTHERWISE NOTED.
6. SIGNAL PROVIDED BY EHC TO INHIBIT VALVES OPENING DURING PREWARMING OPERATION.
7. ONE CONTROL SWITCH IS PROVIDED FOR ALL (4) MSR REHEATER STEAM FEED AND ASSOCIATED DRAIN SYSTEMS. THIS CONTROL FUNCTIONS TO PREVENT LOSS OF BLANKETING STEAM WHEN STEAM BLANKETING IS BEING APPLIED.
8. LOCAL PANELS AND RACKS P180, P1019, P1022, P1159, P1160, P1163, P1190, P1101, P277A AND P1026, CARRY PREFIX 1H51.
9. FOR STEM SEALING DETAILS, SEE DWG. 302-0151-00000.
10. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
11. OPERATING DATA IS TYPICALLY DERIVED FROM GE THERMAL KIT HEAT BALANCES. THE THERMAL KIT HEAT BALANCES ARE KEPT IN DESIGN INPUT RECORD (DIR) 237. OPERATING DATA SHOWN IS FOR RATED CONDITIONS APPLICABLE TO THE IMPLEMENTATION OF THE FOLLOWING PLANT CHANGES:
    a.) POWER UPRATE TO 105% OF THE ORIGINAL DESIGN (REF.: TAF 81794).
    b.) PARTIAL ARC ADMISSION (REF.: DCP 98-0050)
    NOTE: PARTIAL ARC PARAMETER CHANGES (UP & DOWN) ARE SHOWN ONLY IF THEY ARE GREATER THAN 1% OF THE POWER UPRATE VALUES.
    c.) LOW PRESSURE TURBINE ROTOR REPLACEMENT (REF.: ECP 04-0070).
12. REDUCER IS MADE OF ASTM A234 WP11 CHROME-MOLY MATERIAL WHICH IS COMPARABLE TO ASTM A234 WP22. REFERENCE ECP 13-0591-001.
13. INLET REDUCER IS MADE OF ASTM A234 WPB & OUTLET REDUCER IS MADE OF ASTM A234 WP11, BOTH OF WHICH ARE CHROME-MOLY MATERIAL COMPARABLE TO ASTM A234 WP22. REFERENCE ECP 13-0591-001.

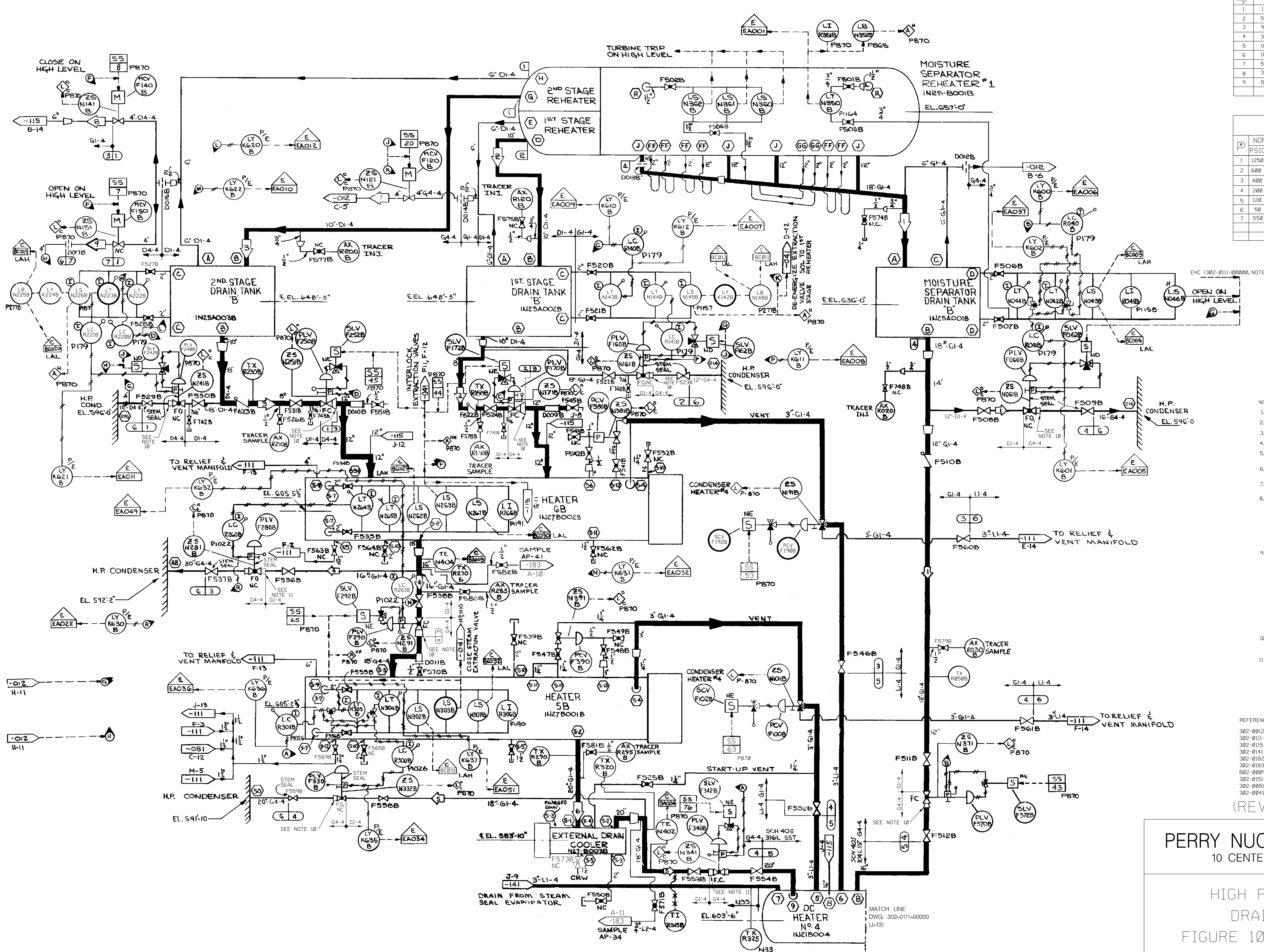
REFERENCES:

302-0012-00000	REHEAT STEAM SYSTEM N11
302-0041-00000	EXTRACTION STEAM SYSTEM N36
302-0112-00000	HIGH PRESSURE HEATER DRAINS AND VENTS "B" SYSTEM N25
302-0113-00000	LOW PRESSURE HEATER DRAINS AND VENTS SYSTEM N26
302-0114-00000	HIGH PRESSURE HEATER DRAINS AND VENTS "A" SYSTEM N25
302-0122-00000	MAIN, REHEAT, EXTRACTION, AND MISCELLANEOUS DRAINS SYSTEM N22
302-0183-00000	TURBINE PLANT SAMPLING SYSTEM P33
802-0009-00000	REACTOR - TURBINE GENERATOR TRIP DIAGRAM
302-0151-00000	CONDENSATE SEAL SYSTEM P12
302-0014-00000	REHEATER HEATING STEAM SYSTEM N11
302-0115-00000	HIGH PRESSURE HEATER DRAINS AND VENTS "B" SYSTEM N25
302-0082-00000	FEEDWATER SYSTEM N27

(REV. 21 10/2019)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

HIGH PRESSURE HEATER DRAINS AND VENTS
FIGURE 10.1-8 (SHEET 1 OF 4)
(DWG. D-302-0111-00000)



EHC (302-0111-00000, NOTE 6)

-111 A-4 (302-0111-00000, NOTE 7)

OPERATING DATA (RATED) SEE NOTES 8, 9				
#	PSIA	LB/HR	°F	REMARKS
1	191	421,716	378	
2	552	178,050	477	
3	966	159,496	540	
4	344	1,143,886	382	
5	185	1,526,419	339	
6	185	1,526,419	339	
7	552	17,805	477	
8	363	15,950	435	
9	529	15,453	474	

DESIGN DATA						
#	NORMAL		UPSET			REMARKS
	PSIG	°F	PSIG	°F	TIME	
1	1250	575	NA	NA	NA	
2	600	492	NA	NA	NA	
3	400	450	NA	NA	NA	
4	200	385	NA	NA	NA	
5	120	350	NA	NA	NA	
6	50	380	NA	NA	NA	
7	550	500	NA	NA	NA	

NOTES:

1. VENT ORIFICES ON HEATERS 5 AND 6 ARE INTERNAL.
2. FEEDWATER HEATERS SHOWN ON FOSTER-WHEELER DRAWINGS.
3. DC HEATER SHOWN ON CHICAGO HEATER DWG. D-3536.
4. MANUAL HEATER DRAINS ARE PIPED TO CONDENSER.
5. ALL PANEL AND RACKS ARE PREFIXED 1H13, UNLESS OTHERWISE NOTED.
6. LOCAL PANELS AND RACKS P1164, P1157, P1158, P1180, P179 P1019, P1022, P277B AND P1026 CARRY PREFIX 1H51.
7. FOR STEM SEALING DETAILS, SEE DWG. 302-0151-00000.
8. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
9. OPERATING DATA IS TYPICALLY DERIVED FROM GE THERMAL KIT HEAT BALANCES. THE THERMAL KIT HEAT BALANCES ARE KEPT IN DESIGN INPUT RECORD (DIR) 237. OPERATING DATA SHOWN IS FOR RATED CONDITIONS APPLICABLE TO THE IMPLEMENTATION OF THE FOLLOWING PLANT CHANGES:
   a.) POWER UPRATE TO 105% OF THE ORIGINAL DESIGN (REF.: TAF 81794).
   b.) PARTIAL ARC ADMISSION (REF.: DCP 98-0050)
   NOTE: PARTIAL ARC PARAMETER CHANGES (UP & DOWN) ARE SHOWN ONLY IF THEY ARE GREATER THAN 1% OF THE POWER UPRATE VALUES.
   c.) LOW PRESSURE TURBINE ROTOR REPLACEMENT (REF.: ECP 04-0070).
10. REDUCER IS MADE OF ASTM A234 WP11 CHROME-MOLY MATERIAL WHICH IS COMPARABLE TO ASTM A234 WP22 REFERENCE ECP 13-0591-001.
11. INLET REDUCER IS MADE OF ASTM A234 WPB & OUTLET REDUCER IS MADE OF ASTM A234 WP11, BOTH OF WHICH ARE CHROME-MOLY MATERIAL COMPARABLE TO ASTM A234 WP22, REFERENCE ECP 13-0591-001.

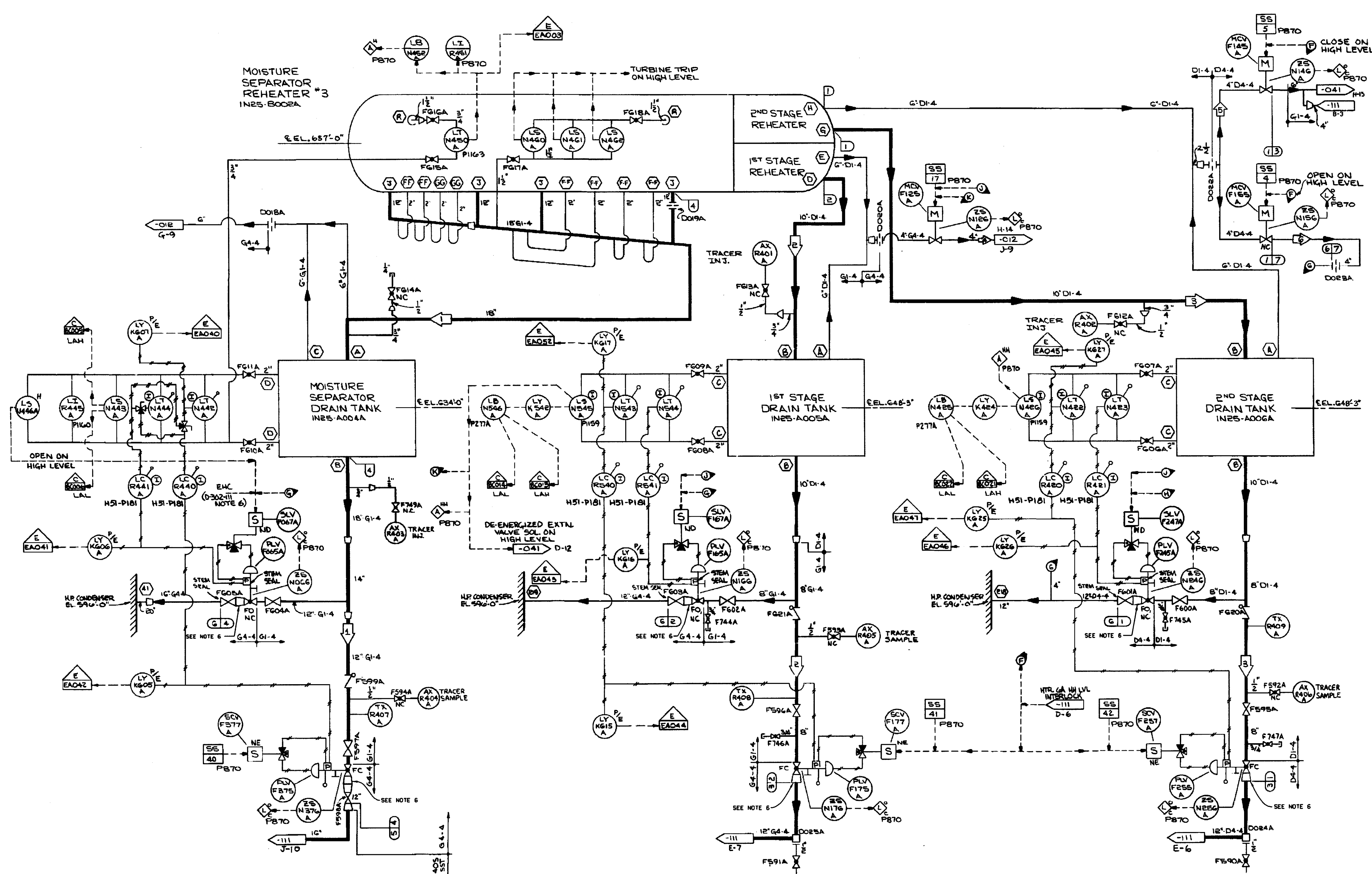
REFERENCES:

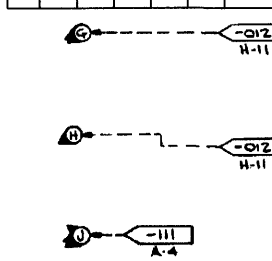
302-0012-00000 REHEAT STEAM SYSTEM N11
302-0111-00000 HIGH PRESSURE HEATER DRAINS AND VENTS "A" SYSTEM N25
302-0115-00000 HIGH PRESSURE HEATER DRAINS AND VENTS "B" SYSTEM N25
302-0141-00000 STEAM SEAL SYSTEM N33
302-0182-00000 TURBINE PLANT SAMPLING SYSTEM P33
302-0183-00000 TURBINE PLANT SAMPLING SYSTEM P33
802-0009-00000 REACTOR - TURBINE GENERATOR TRIP DIAGRAM
302-0151-00000 CONDENSATE SEAL SYSTEM P12
302-0081-00000 FEEDWATER SYSTEM N27
302-0041-00000 EXTRACTION STEAM SYSTEM N36

(REV. 20 10/2017)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

HIGH PRESSURE HEATER
DRAINS AND VENTS
FIGURE 10.1-8 (SHEET 2 OF 4)
(DWG. D-302-0112-00000)





302-0111-00000, NOTE 7

OPERATING DATA (RATED)

SEE NOTES 4, 5

⇨	PSIA	LB/HR	°F	REMARKS
1	191.4	421,716	378	
2	552	178,050	477	
3	966	159,496	540	
4	552	17,805	477	
5	362	15,950	435	
6	529	15,453	474	

DESIGN DATA

P	NORMAL		UPSET			REMARKS
	PSIG	°F	PSIG	°F	TIME	
1	1250	575	NA	NA	NA	
2	600	492	NA	NA	NA	
3	400	450	NA	NA	NA	
4	200	385	NA	NA	NA	
5	120	350	NA	NA	NA	
6	50	380	NA	NA	NA	
7	550	500	NA	NA	NA	

NOTES:

1. ALL PANELS & RACKS ARE PREFIXED 1H13, UNLESS OTHERWISE NOTED.
2. LOCAL PANELS & RACKS P1159, P1160, P1163 & P277A, PREFIX 1H51.
3. FOR STEM SEALING DETAILS, SEE DWG. 302-0151-00000.
4. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
5. OPERATING DATA IS TYPICALLY DERIVED FROM GE THERMAL KIT HEAT BALANCES. THE THERMAL KIT HEAT BALANCES ARE KEPT IN DESIGN INPUT RECORD (DIR) 237. OPERATING DATA SHOWN IS FOR RATED CONDITIONS APPLICABLE TO THE IMPLEMENTATION OF THE FOLLOWING PLANT CHANGES:
   a.) POWER UPRATE TO 105% OF THE ORIGINAL DESIGN (REF.: TAF 81794).
   b.) PARTIAL ARC ADMISSION (REF.: DCP 98-0050)
   NOTE: PARTIAL ARC PARAMETER CHANGES (UP & DOWN) ARE SHOWN ONLY IF THEY ARE GREATER THAN 1% OF THE POWER UPRATE VALUES.
   c.) LOW PRESSURE TURBINE ROTOR REPLACEMENT (REF.: ECP 04-0070).
6. THE REDUCER IS MADE OF ASTM A234 WP11 CHROME-MOLY MATERIAL WHICH IS COMPARABLE TO A234 WP22 CL3. REFERENCE ECP 13-0240.

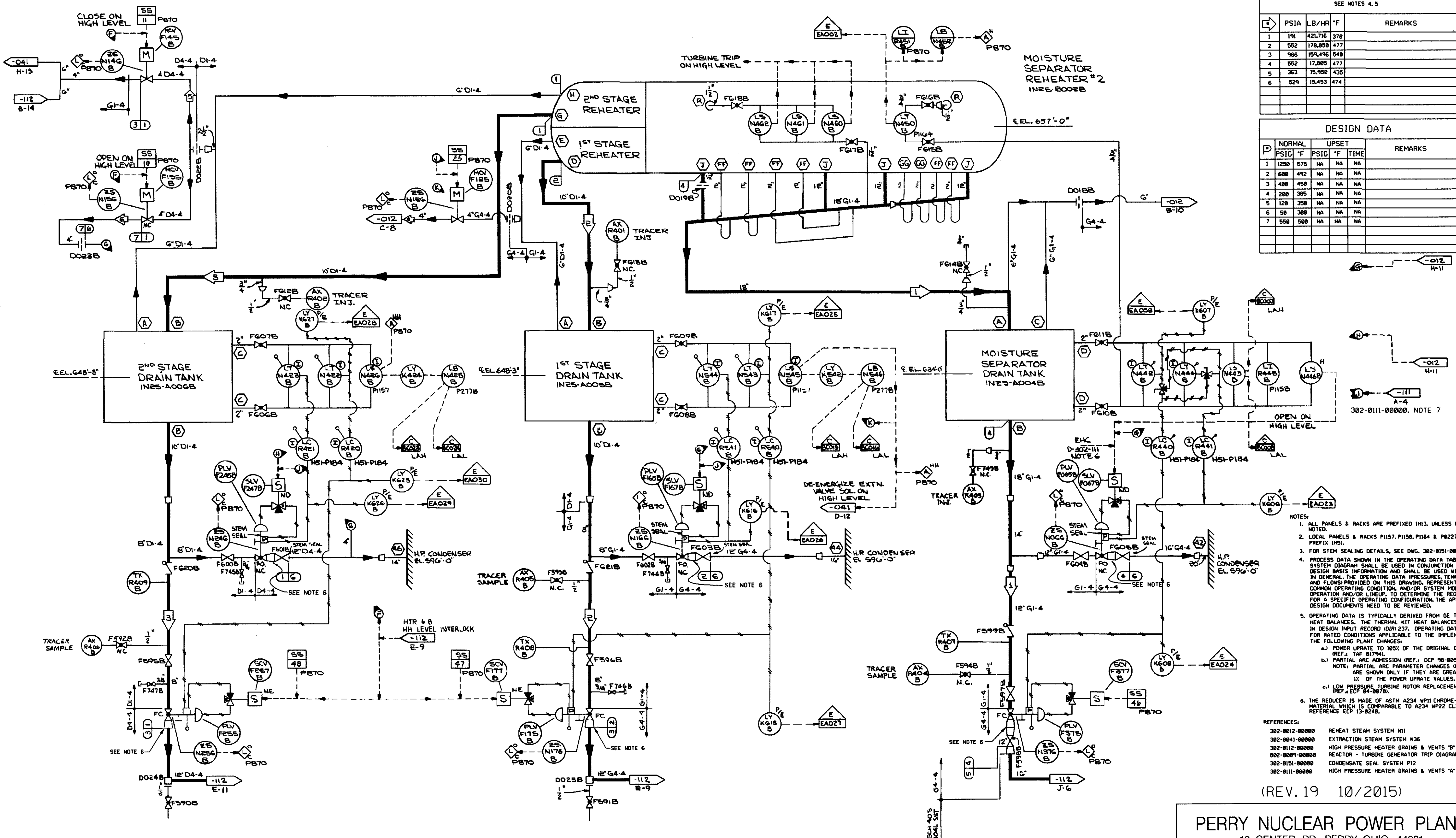
REFERENCES:

302-0012-00000	REHEAT STEAM SYSTEM N11
302-0041-00000	EXTRACTION STEAM SYSTEM N36
302-0111-00000	HIGH PRESSURE HEATER DRAINS & VENTS "A" SYSTEM N25
802-0009-00000	REACTOR - TURBINE GENERATOR TRIP DIAGRAM
302-0151-00000	CONDENSATE SEAL SYSTEM P12

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

HIGH PRESSURE HEATER DRAINS AND VENTS
FIGURE 10.1-8 (SHEET 3 OF 4)
(DWG. D-302-0114-00000)



OPERATING DATA (RATED)

SEE NOTES 4, 5

⇨	PSIA	LB/HR	°F	REMARKS
1	191	421,716	378	
2	552	178,050	477	
3	966	159,496	540	
4	552	17,805	477	
5	363	15,950	435	
6	529	15,453	474	

DESIGN DATA

P	NORMAL		UPSET			REMARKS
	PSIG	°F	PSIG	°F	TIME	
1	1250	575	NA	NA	NA	
2	600	492	NA	NA	NA	
3	400	450	NA	NA	NA	
4	200	385	NA	NA	NA	
5	120	350	NA	NA	NA	
6	50	380	NA	NA	NA	
7	550	500	NA	NA	NA	

NOTES:

1. ALL PANELS & RACKS ARE PREFIXED 1H13, UNLESS OTHERWISE NOTED.
2. LOCAL PANELS & RACKS P1157, P1158, P1164 & P0227B, CARRY PREFIX 1H51.
3. FOR STEM SEALING DETAILS, SEE DWG. 302-0151-00000.
4. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
5. OPERATING DATA IS TYPICALLY DERIVED FROM GE THERMAL KIT HEAT BALANCES. THE THERMAL KIT HEAT BALANCES ARE KEPT IN DESIGN INPUT RECORD (DIR) 237. OPERATING DATA SHOWN IS FOR RATED CONDITIONS APPLICABLE TO THE IMPLEMENTATION OF THE FOLLOWING PLANT CHANGES:
   a.) POWER UPRATE TO 105% OF THE ORIGINAL DESIGN (REF.: TAF 81794).
   b.) PARTIAL ARC ADMISSION (REF.: DCP 98-0050)
   NOTE: PARTIAL ARC PARAMETER CHANGES (UP & DOWN) ARE SHOWN ONLY IF THEY ARE GREATER THAN 1% OF THE POWER UPRATE VALUES.
   c.) LOW PRESSURE TURBINE ROTOR REPLACEMENT (REF.: ECP 04-0070).
6. THE REDUCER IS MADE OF ASTM A234 WP11 CHROME-MOLY MATERIAL WHICH IS COMPARABLE TO A234 WP22 CL3. REFERENCE ECP 13-0240.

REFERENCES:

302-0012-00000	REHEAT STEAM SYSTEM N11
302-0041-00000	EXTRACTION STEAM SYSTEM N36
302-0112-00000	HIGH PRESSURE HEATER DRAINS & VENTS "B" SYSTEM N25
802-0009-00000	REACTOR - TURBINE GENERATOR TRIP DIAGRAM
302-0151-00000	CONDENSATE SEAL SYSTEM P12
302-0111-00000	HIGH PRESSURE HEATER DRAINS & VENTS "A" SYSTEM N25

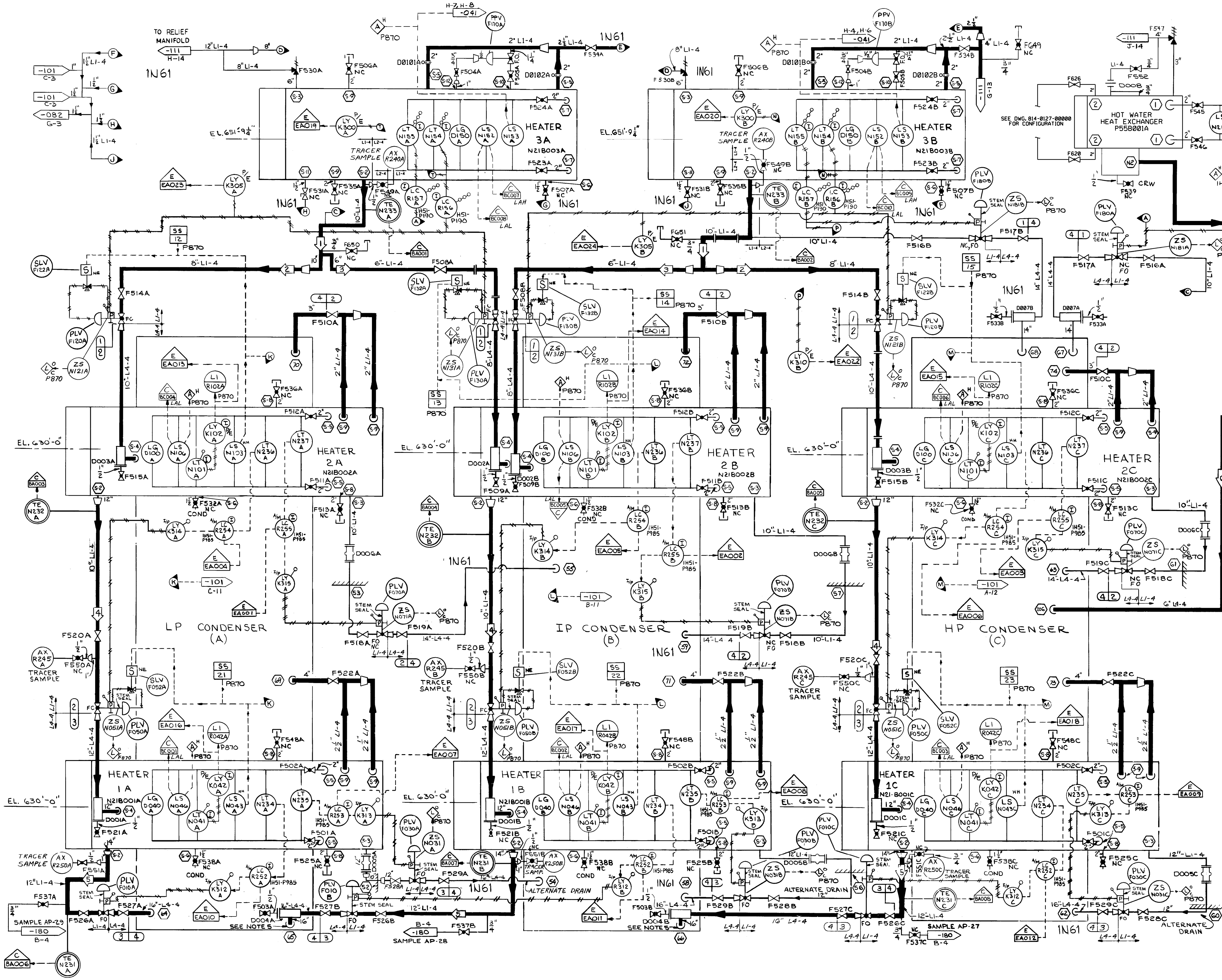
(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

HIGH PRESSURE HEATER DRAINS AND VENTS

FIGURE 10.1-8 (SHEET 4 OF 4)

(DWG. D-302-0115-00000)



OPERATING DATA (RATED)

SEE NOTES 9, 10

#	PSIA	LB/HR	°F	REMARKS
1	61	394,912	229	
2	61	263,274	229	
3	61	131,637	229	
4	18.6	489,097	167	
5	5.0	724,180	115	
6	55	40,000	240	

DESIGN DATA

#	NORMAL		UPSET			REMARKS
	PSIG	°F	PSIG	°F	TIME	
1	75	310	-			
2	50	200	-			
3	50	150	-			
4	50	300	-			

NOTES:

1. ALL PIPING CLASSIFIED L1-4 EXCEPT PIPING DOWNSTREAM OF LEVEL CONTROL VALVES WHICH IS L4-4.
2. VENT ORIFICES ARE INTERNAL TO THE HEATERS WITH THE EXCEPTION OF THE NO. 3 HEATERS.
3. HEATERS SHOWN ON FORSTER-WHEELER DRAWINGS WITH THE EXCEPTION OF THE NO. 3 HEATERS WHICH ARE SHOWN ON SPX DRAWINGS.
4. ALL MANUAL DRAINS ARE PIPED TO CONDENSER.
5. CONNECTION IN CONDENSER NECK.
6. ALL PANEL & RACKS ARE PREFIXED 1H13, UNLESS OTHERWISE NOTED.
7. FOR STEM SEALING DETAILS, SEE DWG. 302-0151-00000.
8. VALVE DESIGNATION PER DRAWING 803-0148-00055
9. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
10. OPERATING DATA IS TYPICALLY DERIVED FROM GE THERMAL KIT HEAT BALANCES. THE THERMAL KIT HEAT BALANCES ARE KEPT IN DESIGN INPUT RECORD (DIR) 237. OPERATING DATA SHOWN IS FOR RATED CONDITIONS APPLICABLE TO THE IMPLEMENTATION OF THE FOLLOWING PLANT CHANGES:
    a.) POWER UPRATE TO 105% OF THE ORIGINAL DESIGN (REF.: TAF 81794).
    b.) PARTIAL ARC ADMISSION (REF.: DCP 98-0050)
    NOTE: PARTIAL ARC PARAMETER CHANGES (UP & DOWN) ARE SHOWN ONLY IF THEY ARE GREATER THAN 1% OF THE POWER UPRATE VALUES.
    c.) LOW PRESSURE TURBINE ROTOR REPLACEMENT (REF.: ECP 04-0070).

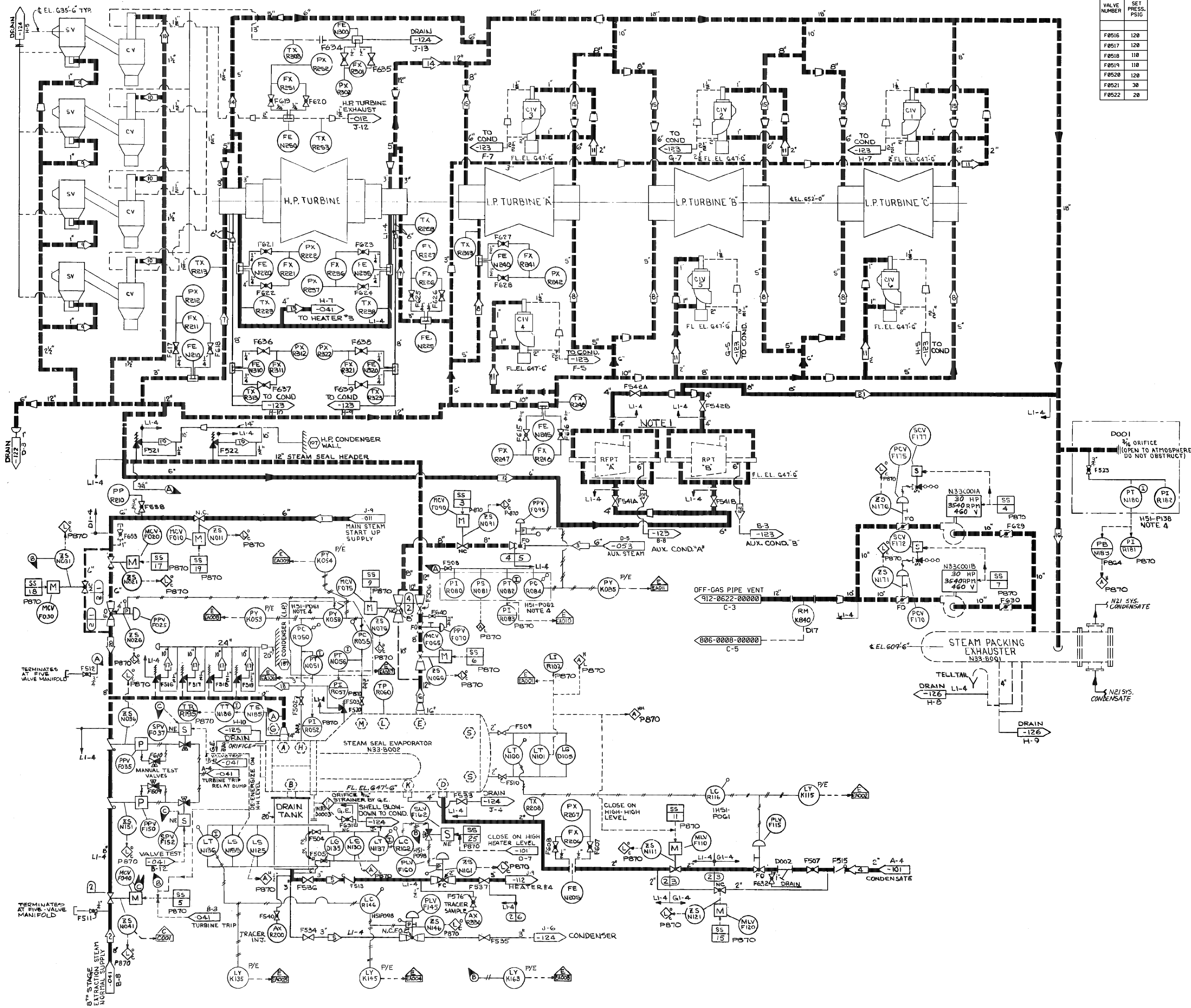
REFERENCES:

302-0041-00000	EXTRACTION STEAM SYSTEM N36
302-0111-00000	HIGH PRESSURE HEATER DRAINS & VENTS VENTS "A" SYSTEM N25
302-0180-00000	TURBINE PLANT SAMPLING SYSTEM P33
302-0101-00000	CONDENSATE SYSTEM N21
302-0151-00000	CONDENSATE SEAL SYSTEM P12
302-0082-00000	FEEDWATER SYSTEM N27

(REV. 21 10/2019)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

LOW PRESSURE
HEATER DRAINS AND VENTS
FIGURE 10.1-9
(DWG. D-302-0113-00000)



RELIEF VALVE SET PRESS.	
VALVE NUMBER	SET PRESS. PSIG
F0516	120
F0517	120
F0518	110
F0519	110
F0520	120
F0521	30
F0522	20

OPERATING DATA

SEE NOTES 8, 9

#	PSIG	LB/HR	°F	REMARKS
1	950	30,100	540	START UP
2	95	26,400	420	50,700 MAX.
3	90	25,000	331	45,000 MAX.
4	60-400	25,000	216	45,000 MAX.
5	67	130 GPM	313	START-UP (MAX.)
	33	65 GPM	278	START-UP (NORM.)
	82	110 GPM	326	FULL-LOAD (MAX.)
	83	60 GPM	327	FULL-LOAD (NORM.)
6	10-60	25,000	300	45,000 MAX.
7	4	1170	260	
8	4	2940	260	
9	4	290	260	
10	4	50	260	
11	4	75	260	
12	4	810	260	MAX. 1620 LB/HR
13	180	8,150	380	39,380 MAX.
14	5" H_2O VAC	550	200	PLUS 190 LB/HR AIR
15	5" H_2O VAC	1110	200	PLUS 390 LB/HR AIR
16	10" H_2O VAC	7760	200	PLUS 2720 LB/HR AIR
17	65	185,000	355	RELIEF VALVE
18	10	190,000	-	380 GPM RELEIF VALVE SP. GR. = 1
19	10	52,000	270	RELIEF VALVE
20	50	30,100		
21	5" H_2O VAC	355	200	PLUS 130 LB/HR AIR MAX. 710 LB/HR STM. & 260 LB/HR AIR
22	5" H_2O VAC	747	260	1490 LB/HR MAX.

DESIGN DATA

#	NORMAL		UPSET			REMARKS
	PSIG	°F	PSIG	°F	TIME	
1	1250	575				
2	150	450				
3	600	320				
4	25	450				
5	195	386				
6	120	350				

NOTES:

1. OUTLINE OF RFPT (PURCHASED CONNECTIONS) ON G.E. DWG. 509E419DC.
2. STEAM SEAL EVAPORATOR SHOWN ON G.E. DWG. 116D4411.
3. STEAM PACKING EXHAUSTER SHOWN ON G.E. DWG. 161C4761.
4. INSTRUMENT INCLUDED WITHIN BOUNDARY ARE LOCATED ON THE PANEL INDICATED.
5. ALL PANEL NUMBERS ARE PREFIXED BY 1H13-, UNLESS OTHERWISE NOTED.
6. FORWARD-REVERSE TUBE REPRESENTED BY SYMBOLS. ROOT VALVES BY G.E.T.
7. G.E.T. DOES NOT PROVIDE TEST THERMOWELLS IN THEIR PORTION OF THE STEAM SEAL PIPING. STRAP COUPLES ARE TO BE SUPPLIED BY CEI FOR THE FOLLOWING TEMPERATURE TEST POINTS: R213, R228, R243, R248, R253, AND R303.
8. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
9. OPERATING DATA IS TYPICALLY DERIVED FROM GE THERMAL KIT HEAT BALANCES. THE THERMAL KIT HEAT BALANCES ARE KEPT IN DESIGN INPUT RECORD (DIR) 237. OPERATING DATA SHOWN IS FOR RATED CONDITIONS APPLICABLE TO THE IMPLEMENTATION OF THE FOLLOWING PLANT CHANGES:
   a.) POWER UPRATE TO 105% OF THE ORIGINAL DESIGN (REF.: TAF 81794).
   b.) PARTIAL ARC ADMISSION (REF.: DCP 98-0050)
   NOTE: PARTIAL ARC PARAMETER CHANGES (UP & DOWN) ARE SHOWN ONLY IF THEY ARE GREATER THAN 1% OF THE POWER UPRATE VALUES.
   c.) LOW PRESSURE TURBINE ROTOR REPLACEMENT (REF.: ECP 04-0070).

REFERENCES:

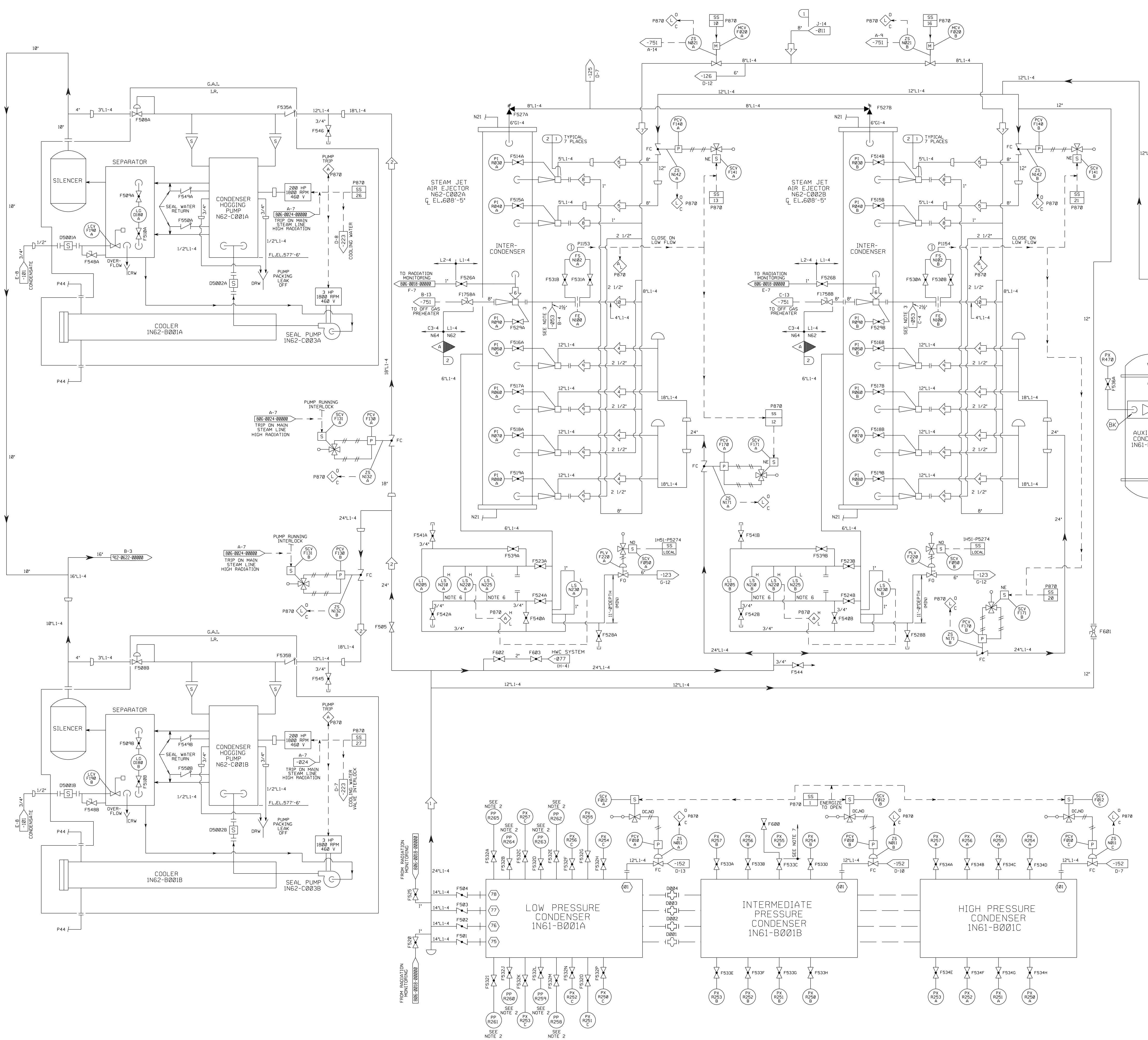
302-0011-00000	MAIN STEAM SYSTEM N11
302-0041-0000	EXTRACTOR STEAM SYSTEM N36
302-0101-00000	CONDENSATE SYSTEM N21
302-0112-00000	HIGH PRESSURE HEATER DRAINS AND VENTS "B" SYSTEM N25
302-0122-00000	MAIN, REHEAT, EXTRACTION AND MISCELLANEOUS DRAINS SYSTEM N22
302-0123-00000	MAIN, REHEAT, EXTRACTION AND MISCELLANEOUS DRAINS SYSTEM N22
302-0124-00000	MAIN, REHEAT, EXTRACTION AND MISCELLANEOUS DRAINS SYSTEM N22
302-0125-00000	MAIN, REHEAT, EXTRACTION AND MISCELLANEOUS DRAINS SYSTEM N22
912-0622-00000	OFF-GAS BUILDING EXHAUST SYSTEM M36
806-0008-00000	PLANT RADIATION MONITORING SYSTEM D17
125D3148	ELEMENTARY DIAGRAM TRIP AND MONITORING SYSTEM (G.E.)
834E202	DIAGRAM OF STEAM SEAL SYSTEM (G.E.)
302-0126-00000	MAIN, REHEAT, EXTRACTION, AND MISCELLANEOUS DRAINS SYSTEM N22
302-0053-00000	AUXILIARY STEAM SYSTEM P61
302-0012-00000	REHEAT STEAM SYSTEM N11

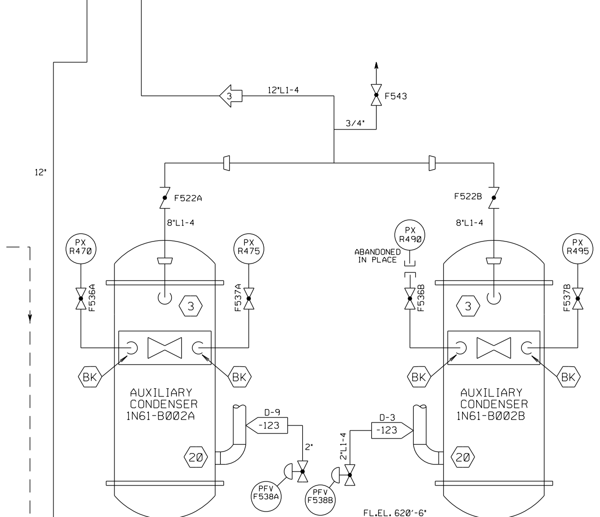
(Rev. 18 10/13)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

STEAM SEAL SYSTEM

FIGURE 10.1-10
(DWG. D-302-0141-00000)





OPERATING DATA

SEE NOTES 8, 9

	#	IN.HGA	°F	#/HR	REMARKS
AIR	1	2	100	3100	AIR AND VAPOR
	2	3.0	75	2500	ACFM
	3	2	100	260	AIR AND VAPOR
	4	2	100	775	AIR AND VAPOR
	5	2	100	130	AIR AND VAPOR
	6	8	228	654	AIR AND VAPOR
STEAM		PSIA			
	7	140	353	24,377	STEAM
	8	140	353	408	STEAM
	9	140	353	3509	STEAM
	10	140	353	9525	STEAM

DESIGN DATA

#	NORMAL		UPSET			REMARKS
	PSIG	°F	PSIG	°F	TIME	
1	150	353	150	353		
2	15	353				

REFERENCES:

302-0011-00000 MAIN STEAM SYSTEM, N11
302-0053-00000 AUXILIARY STEAM, P61
302-0101-00000 CONDENSATE SYSTEM, N21
302-0123-00000 M.R.E. AND MISCELLANOEUS DRAINS SYSTEM, N22
302-0125-00000 M.R.E. AND MISCELLANEOUS DRAINS SYSTEM, N22
302-0126-00000 M.R.E. AND MISCELLANEOUS DRAINS SYSTEM, N22
302-0152-00000 CONDENSATE SEAL SYSTEM, P12
302-0222-00000 TURBINE BLDG. CLOSED COOLING SYSTEM, P44
302-0751-00000 OFF-GAS LOW TEMPERATURE SYSTEM, N64
806-0018-00000 OFF-GAS PRETREATMENT RADIATION MONITORS AND SAMPLERS K-612.
806-0024-00000 PLANT RADIATION MONITORING SYSTEM
912-0622-00000 OFF-GAS BUILDING EXHAUST AND WATER TREATMENT BUILDING VENTILATION SYSTEMS, M36 & M37
881E555 PERFORMANCE TEST PIPING, HOODS A AND B
883E401 PERFORMANCE TEST PIPING, HOOD C

NOTES:

1. ALL PANELS AND RACKS CARRY PREFIX 1H13, UNLESS OTHERWISE NOTED.
2. BASKET TIPS SUPPLIED BY G.E.T. NOT TO BE CONNECTED FOR ASME TEST.
3. TEST CONNECTION PERMANENTLY PIPED.
4. NO IMPACT TESTS ARE REQUIRED FOR PIPING (C3-4) BETWEEN SJAE AND RECOMBINERS.
5. THE SYMBOL A DESIGNATES THOSE NON-SAFETY AREAS OF THE SYSTEM WHERE THE AUGMENTED QUALITY ASSURANCE PROGRAM REQUIREMENTS DEFINED IN SP-45 APPLY.
6. LEVEL SWITCHES N210A & B AND N225A & B ARE ABANDONED IN PLACE.
7. TUBING UPSTREAM OF 1N62F0533C IS LINEAR LOW DENSITY POLYETHYLENE. 1N62F0600 IS A NON-CALIBRATED VALVED FLOW METER. PRESSURE TEST POINT LOCATION PX-R0255B IS BEING UTILIZED AS THE TRACER GAS "TEST SHOT" INJECTION POINT FOR CONDENSER IN-LEAKAGE TESTING ACTIVITIES.
8. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
9. OPERATING DATA IS TYPICALLY DERIVED FROM GE THERMAL KIT HEAT BALANCES. THE THERMAL KIT HEAT BALANCES ARE KEPT IN DESIGN INPUT RECORD (DIR) 237. OPERATING DATA SHOWN IS FOR RATED CONDITIONS APPLICABLE TO THE IMPLEMENTATION OF THE FOLLOWING PLANT CHANGES:
   a.) POWER UPRATE TO 105% OF THE ORIGINAL DESIGN (REF.: TAF 81794).
   b.) PARTIAL ARC ADMISSION (REF.: DCP 98-0050)
   NOTE: PARTIAL ARC PARAMETER CHANGES (UP & DOWN) ARE SHOWN ONLY IF THEY ARE GREATER THAN 1% OF THE POWER UPRATE VALUES.
   c.) LOW PRESSURE TURBINE ROTOR REPLACEMENT (REF.: ECP 04-0070).

(REV. 20 10/2017)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

CONDENSER AIR REMOVAL SYSTEM

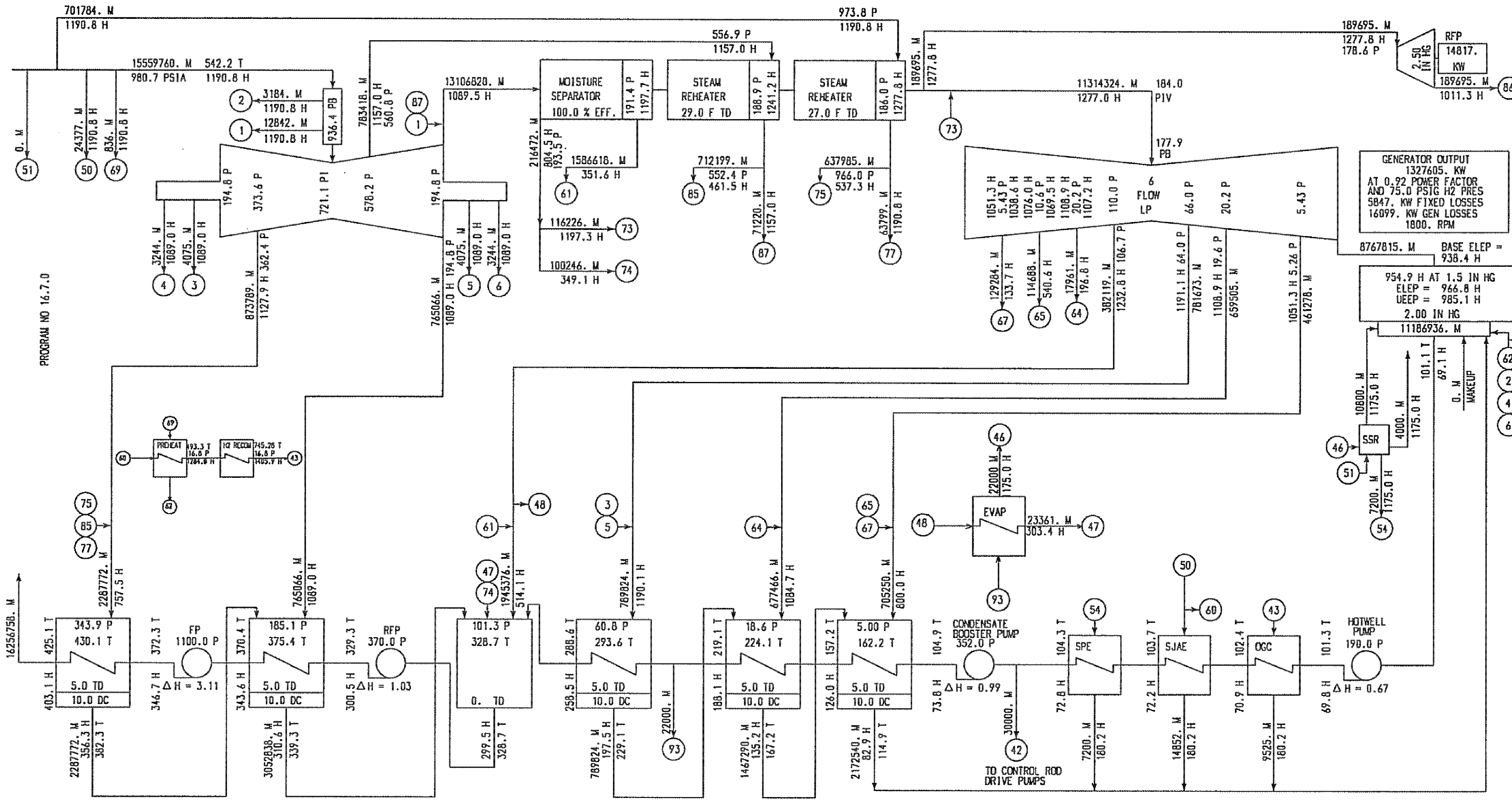
FIGURE 10.1-11

(DWG. D-302-0131-00000)

1LX0537-02 Rev. 1

TURBINE AND EXTRACTION ARRANGEMENT IS SCHEMATIC ONLY

THE VALUE OF GENERATOR OUTPUT SHOWN ON THIS HEAT BALANCE IS AFTER ALL POWER FOR EXCITATION AND OTHER TURBINE-GENERATOR AUXILIARIES HAS BEEN DEDUCTED



VALVE BEST POINT NET HEAT RATE = 15554973. (1190.8 - 403.1) + 701784. (1190.8 - 403.1) + 30000. (1190.8 - 72.8) / 1327605. = 9670 BTU/KW-HR

FENOC - Perry Unit 1
Turbine No. 170X655
LP Monoblock Upgrade
New 43" LSB Design
Rated Thermal Power
(NSSS = 3762.5 MWth)

LEGEND - CALCULATIONS BASED ON 1967 ASME STEAM TABLES
M - FLOW-LB/HR
P - PRESSURE-PSIA
H - ENTHALPY-BTU/LB
T - TEMPERATURE-F DEGREES

1327605. KW 2.00 IN HG ABS 0. PCT MU
TC6F 43.0 IN LSB 1800 RPM
980.7 PSIA 1190.8 BTU / LB TWO STAGE REHEAT
GEN- 1446700. KVA 0.90 PF LIQ 75.0 PSIG H2 PRES

(Rev. 18 10/13)

GENERAL ELECTRIC COMPANY, SCHENECTADY NY

1LX0537-02 Rev. 1 01/12/12

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

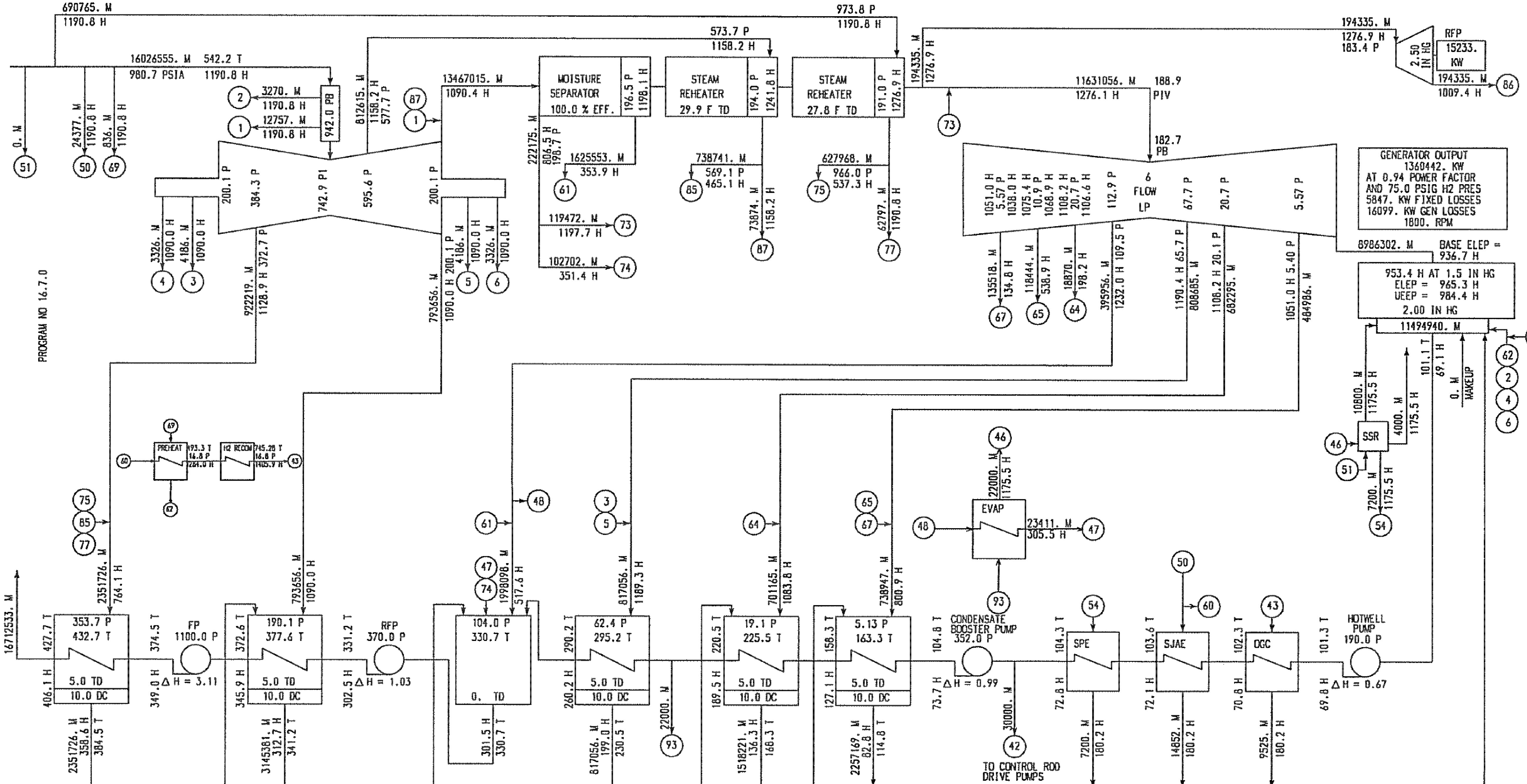
RATED POWER

FIGURE 10.1-12

TURBINE AND EXTRACTION ARRANGEMENT IS SCHEMATIC ONLY

CALCULATED DATA - NOT GUARANTEED

THE VALUE OF GENERATOR OUTPUT SHOWN ON THIS HEAT BALANCE IS AFTER ALL POWER FOR EXCITATION AND OTHER TURBINE-GENERATOR AUXILIARIES HAS BEEN DEDUCTED



$$\text{VALVE BEST POINT NET HEAT RATE} = \frac{16021768.\ (1190.8 - 406.1) + 690765.\ (1190.8 - 406.1) + 30000.\ (1190.8 - 72.8)}{1360442.} = 9665\ \frac{\text{BTU}}{\text{KW-HR}}$$

FENOC - Perry Unit 1
Turbine No. 170X655
LP Monoblock Upgrade
New 43" LSB Design
VWO Flow Condition
(3% Flow Margin Assumption)

LEGEND - CALCULATIONS BASED ON 1967 ASME STEAM TABLES
M - FLOW-LB/HR
P - PRESSURE-PSIA
H - ENTHALPY-BTU/LB
T - TEMPERATURE-F DEGREES

1327605. KW 2.00 IN HG ABS 0. PCT MU
TC6F 43.0 IN LSB 1800 RPM
980.7 PSIA 1190.8 BTU / LB TWO STAGE REHEAT
GEN- 1446700. KVA 0.90 PF LIQ 75.0 PSIG H2 PRES

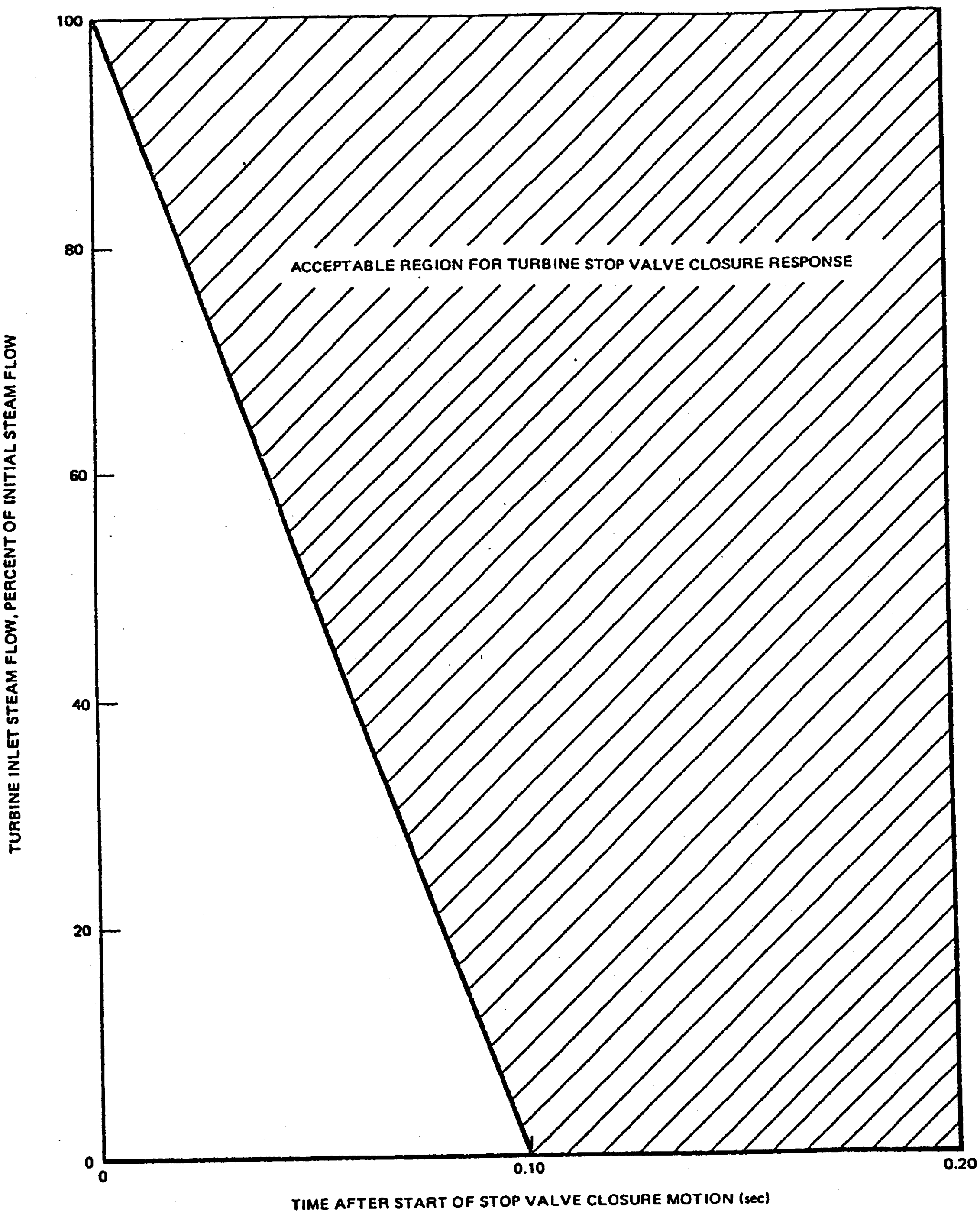
(Rev. 18 10/13)

GENERAL ELECTRIC COMPANY, SCHENECTADY NY

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

DESIGNED POWER - VWO

FIGURE 10.1-13

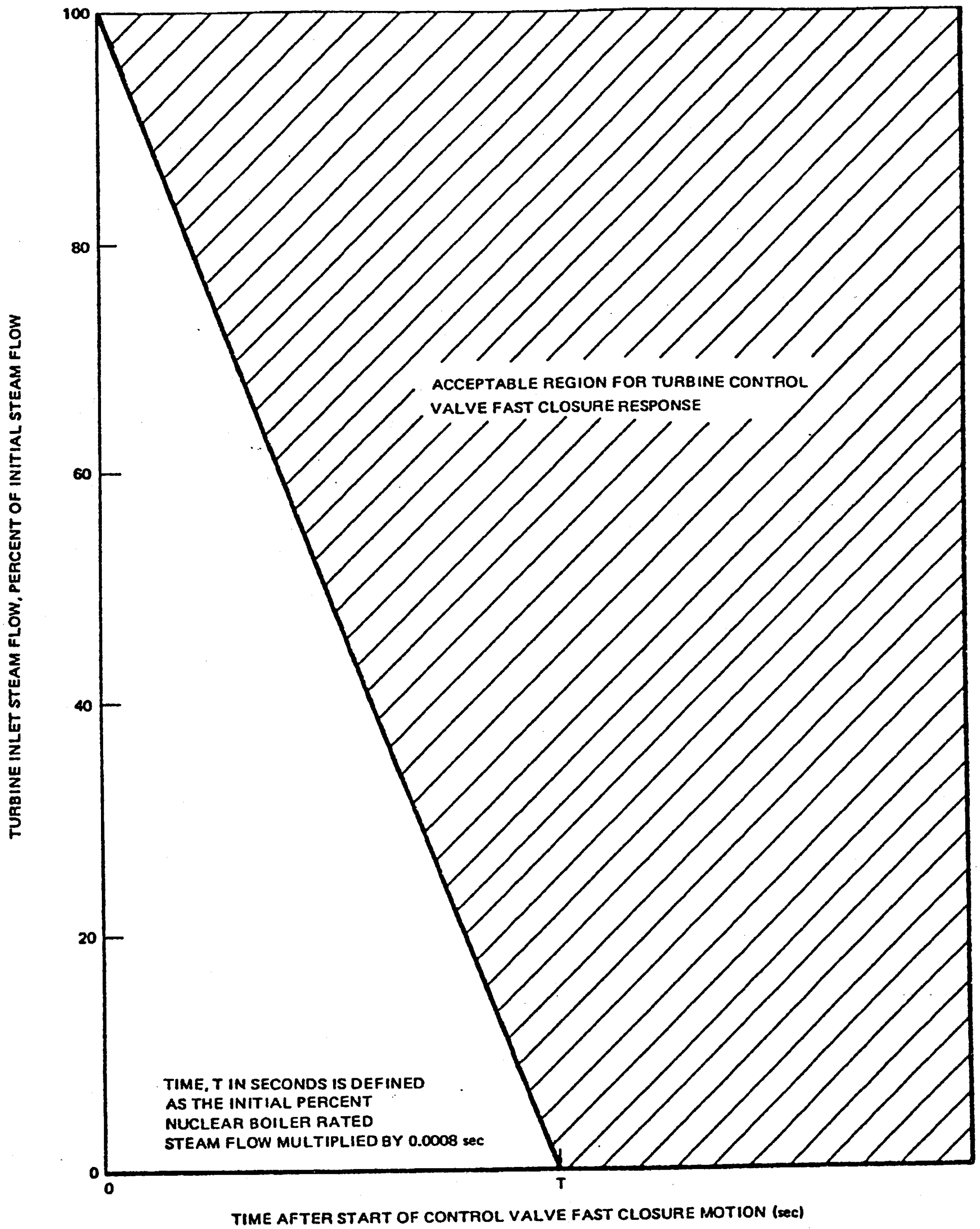


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Turbine Stop Valve
Closure Characteristics

Figure 10.2-1

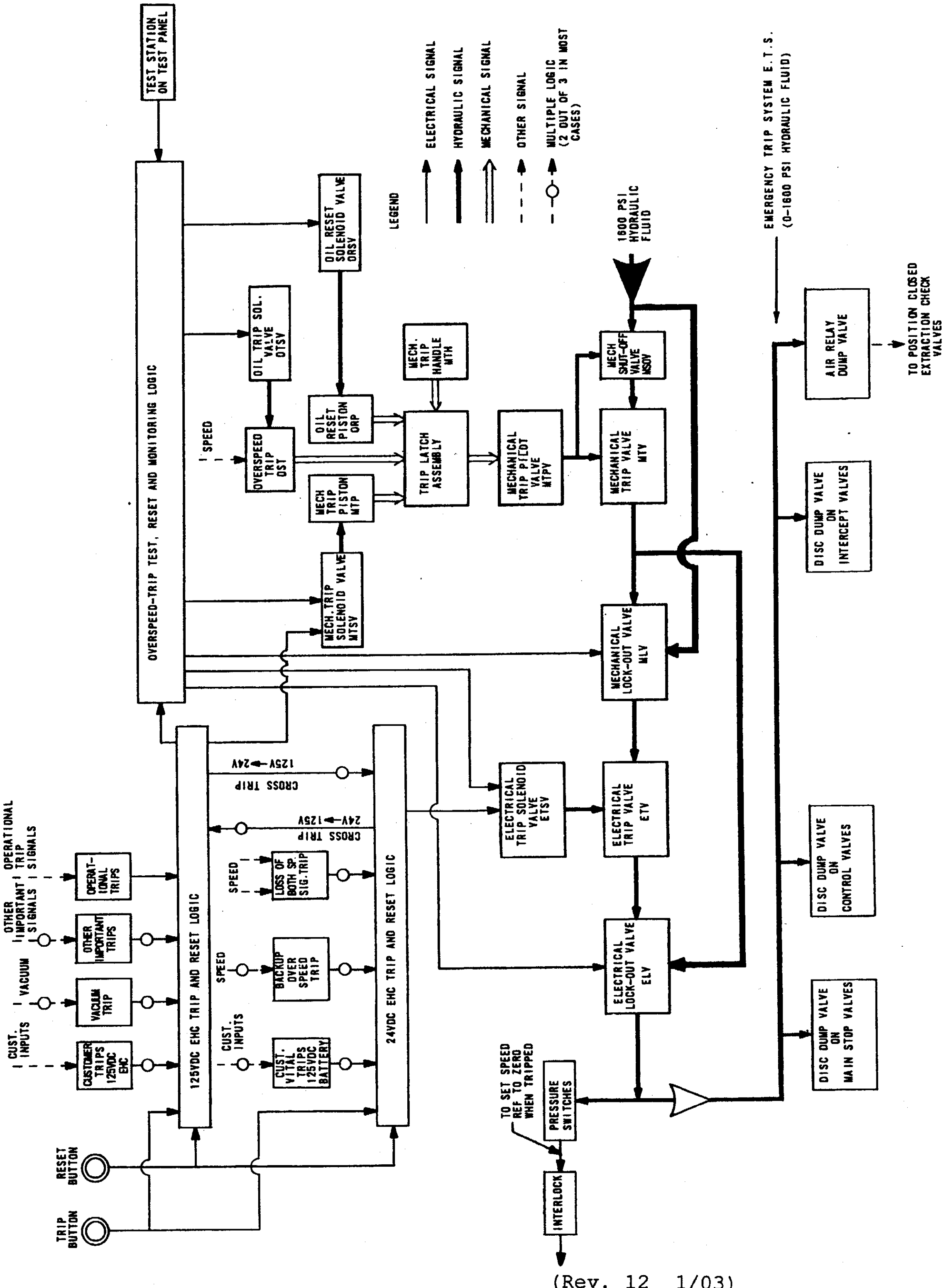


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Turbine Control Valve Fast Closure Characteristics

Figure 10.2-2



(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Turbine Protection System
Block Diagram

Figure 10.2-3

RELIEF VALVE SET PRESSURE	
VALVE N°	P.S.I.G.
RUPTURE DISC	3675
F503A AND F503B	2450
F512A & F512B	120
F516	120

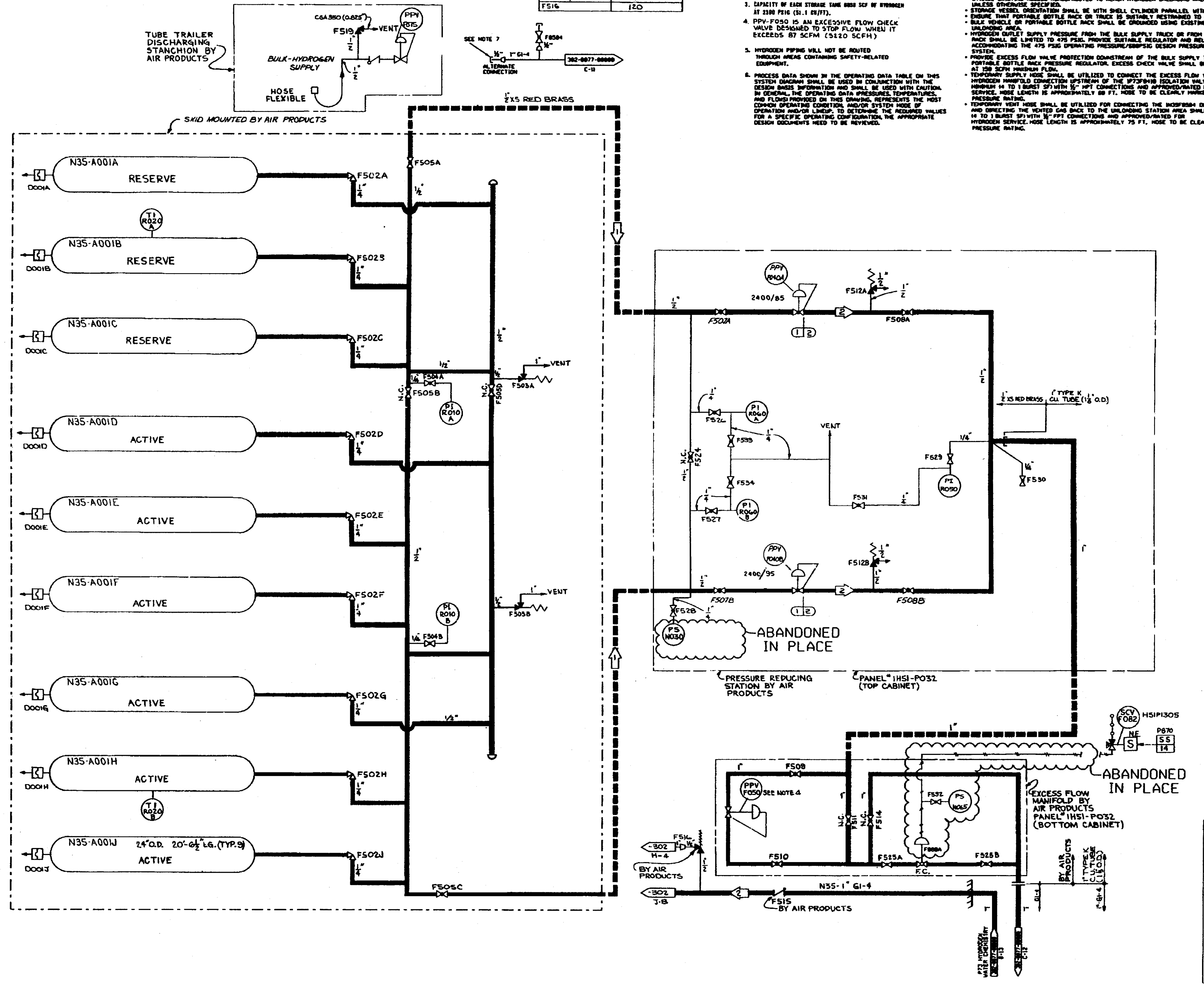
NOTES:

1. MAXIMUM FLOW DURING GENERATOR FILLING OPERATION IS 125 SCFM. THE FLOW DURING NORMAL OPERATION IS 600 SCF PER DAY MAXIMUM (0.42 SCFM).
2. ALL PANELS CARRY PREFIX 1H13-, UNLESS OTHERWISE NOTED.
3. CAPACITY OF EACH STORAGE TANK [illegible] SCF OF HYDROGEN AT 2300 PSIG (51.1 CU/FT).
4. PPV-F050 IS AN EXCESSIVE FLOW CHECK VALVE DESIGNED TO STOP FLOW WHEN IT EXCEEDS 87 SCFM (5220 SCFH)
5. HYDROGEN PIPING WILL NOT BE ROUTED THROUGH AREAS CONTAINING SAFETY-RELATED EQUIPMENT.
6. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
7.
   - ALTERNATE HYDROGEN CONNECTION (BY OTHERS) REQUIREMENTS ARE AS FOLLOWS:
   - STORAGE VOLUME SHALL BE LIMITED TO 62,424 SCFH
   - STORAGE PRESSURE SHALL BE LIMITED TO 2300 PSIG.
   - MAXIMUM VESSEL CAPACITY SHALL BE LIMITED TO 7,387 SCF.
   - STORAGE LOCATION SHALL BE PAVED ROAD AREA IMMEDIATELY EAST OF EXISTING UNLOADING STANCHION (APPROXIMATELY 80 FT. NORTH OF TEMPORARY TIE-IN CONNECTION POINT AT HEATER BAY SUBGRADE STRUCTURE). CURRENT HYDROGEN SEPARATION DISTANCES SHALL BE MAINTAINED. UTILIZE EXISTING ACCESS ROADS/ROUTES TO REACH HYDROGEN UNLOADING AREA, UNLESS OTHERWISE SPECIFIED.
   - STORAGE VESSEL ORIENTATION SHALL BE WITH SHELL CYLINDER PARALLEL WITH N. TURBINE BLDG. WALL.
   - ENSURE THAT PORTABLE BOTTLE RACK OR TRUCK IS SUITABLY RESTRAINED TO GUARD AGAINST DAMAGING WINDS.
   - BULK VEHICLE OR PORTABLE BOTTLE RACK SHALL BE GROUNDED USING EXISTING GROUNDING CLAMP IN UNLOADING AREA.
   - HYDROGEN OUTLET SUPPLY PRESSURE FROM THE BULK SUPPLY TRUCK OR FROM THE PORTABLE BOTTLE RACK SHALL BE LIMITED TO 475 PSIG. PROVIDE SUITABLE REGULATOR AND RELIEF CAPABILITY FOR ACCOMMODATING THE 475 PSIG OPERATING PRESSURE/800PSIG DESIGN PRESSURE OF THE DOWNSTREAM SYSTEM.
   - PROVIDE EXCESS FLOW VALVE PROTECTION DOWNSTREAM OF THE BULK SUPPLY TRUCK OR PORTABLE BOTTLE RACK PRESSURE REGULATOR. EXCESS CHECK VALVE SHALL BE RATED FOR CLOSURE AT 150 SCFM MAXIMUM FLOW.
   - TEMPORARY SUPPLY HOSE SHALL BE UTILIZED TO CONNECT THE EXCESS FLOW VALVE OUTLET TO THE P73 HYDROGEN MANIFOLD CONNECTION UPSTREAM OF THE 1P73F0410 ISOLATION VALVE SHALL BE 3000 PSIG MINIMUM (4 TO 1 BURST SF) WITH ½" MPT CONNECTIONS AND APPROVED/RATED FOR HYDROGEN SERVICE. HOSE LENGTH IS APPROXIMATELY 80 FT. HOSE TO BE CLEARLY MARKED FOR PRESSURE RATING.
   - TEMPORARY VENT HOSE SHALL BE UTILIZED FOR CONNECTING THE 1N35F0584 OUTLET CONNECTION AND DIRECTING THE VENTED GAS BACK TO THE UNLOADING STATION AREA SHALL BE 800 PSIG MINIMUM (4 TO 1 BURST SF) WITH ½" FPT CONNECTIONS AND APPROVED/RATED FOR HYDROGEN SERVICE. HOSE LENGTH IS APPROXIMATELY 75 FT. HOSE TO BE CLEARLY MARKED FOR PRESSURE RATING.

OPERATING DATA

SEE NOTE 6

#	PSIG	SCFM	F	BY	REMARKS
1	2200	125	75		NOTE #1
2	90	125	75		NOTE #1



DESIGN DATA

#	NORMAL PSIG	NORMAL F°	UPSET PSIG	UPSET F°	UPSET TIME	BY	CKD	REMARK	REV
1	2500	200					JN		
2	120	200					JN		

REFERENCES: (AIR PRODUCTS)

1GD SK 24418	SCHEMATIC FLOW DIAGRAM - BULK GASEOUS SUPPLY SYSTEM
1GD SK 19878-1000	PRESSURE REDUCING STATION AND EXCESS FLOW MANIFOLD CABINETS AND SUPPORT ASSEMBLY
1GD SK 20340-0000	NINE VESSEL BULK GAS PRODUCT STORAGE MODULAR ASSEMBLY MODEL 1
302-0302-00000	GENERATOR H_2 AND CO_2 GAS CONTROL SYSTEM N35
1GD SK 30918	HYDROGEN STORAGE AND SUPPLY SYSTEM
125C1308	GAS CONTROL PIPING DIAGRAM, G.E. DRAWING

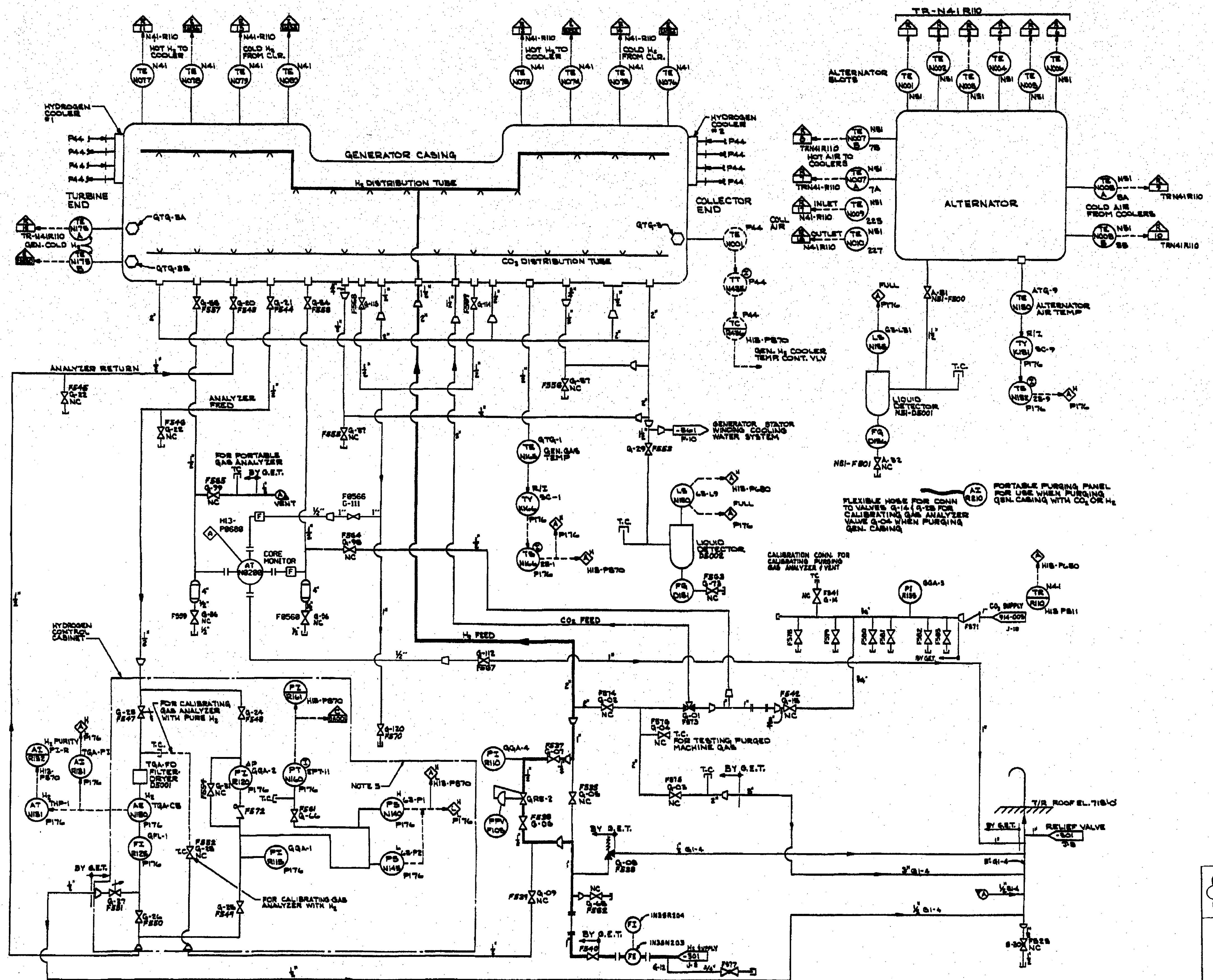
(Rev. 15 10/07)

PERRY NUCLEAR POWER PLANT

Hydrogen Supply System

Figure 10.2-4

(Dwg. D-302-301)



NOTES:

1. THIS DRAWING IS A SCHEMATIC DIAGRAM OF THE VENDOR SUPPLIED GAS CONTROL SYSTEM. IT IS INTENDED TO SHOW MAJOR EQUIPMENT, SYSTEM INTERFACES AND INSTRUMENTATION AND CONTROL IMPLEMENTATION IN SUFFICIENT DETAIL TO PERMIT UNDERSTANDING THE SYSTEM OPERATION.
2. A SYSTEM TROUBLE ALARM FOR THE 1H51-P176 PANEL IS RETRANSMITTED TO 1H13-P680.
3. ALL PANELS CARRY PREFIX 1H51, UNLESS NOTED OTHERWISE. DEVICES WITHIN BOUNDARY ARE LOCATED IN THE GAS TIGHT COMPARTMENT OF THE HYDROGEN AND STATOR COOLING WATER CABINET, 1H51-P176.
4. VALVES SHOWN IN NORMAL POSITION FOR AUTOMATIC OPERATION IN HYDROGEN.
5. ALL INSTRUMENTS CARRY PREFIX 1N35, UNLESS NOTED OTHERWISE. G.E.T. INSTRUMENT DESIGNATORS ARE SHOWN ADJACENT THE NPL TAG NUMBERS FOR CORRELATION WITH G.E.T. SUPPLIED DOCUMENTATION.
6. HYDROGEN PIPING WILL NOT BE ROUTED THROUGH AREAS CONTAINING SAFETY RELATED EQUIPMENT.

REFERENCES:

D-302-222	TURBINE BUILDING CLOSED COOLING SYSTEM P44
D-302-301	HYDROGEN SUPPLY SYSTEM N35
D-914-005	CARBON DIOXIDE SYSTEM P54
4549-43-010	GENERATOR ELECTRICAL OUTLINE, G.E.T. DWG. 779E909
4549-43-052	GAS CONTROL PIPING DIAGRAM, G.E.T. DWG. 12501309
4549-43-074	CABINET OUTLINE HYDROGEN AND STATOR COOLING G.E.T. DWG. 12501307
4549-43-176	ALTERNATOR CONNECTIONS, G.E.T. DWG. 340100048
4549-43-177	ALTERNATOR MECHANICAL OUTLINE, G.E.T. DWG. 340100010
4549-65-027	SCHEMATIC DIAGRAM HYDROGEN AND STATOR COOLING G.E.T. DWG. 155C5572
4549-65-040	GENERATOR PIPING CONNECTION, G.E.T. DWG. 13303962
4549-43-058	CO_2 MANIFOLD OUTLINE G.E.T. DWG. 155B3647
4549-43-054	FLOAT TRAP OUTLINE G.E.T. DWG. 142C4540
D-302-381	GENERATOR STATOR WINDING COOLING WATER SYSTEM N43
4549-65-075	GAS CONTROL PIPING DIAG. G.E.T. DWG. 283A4509.

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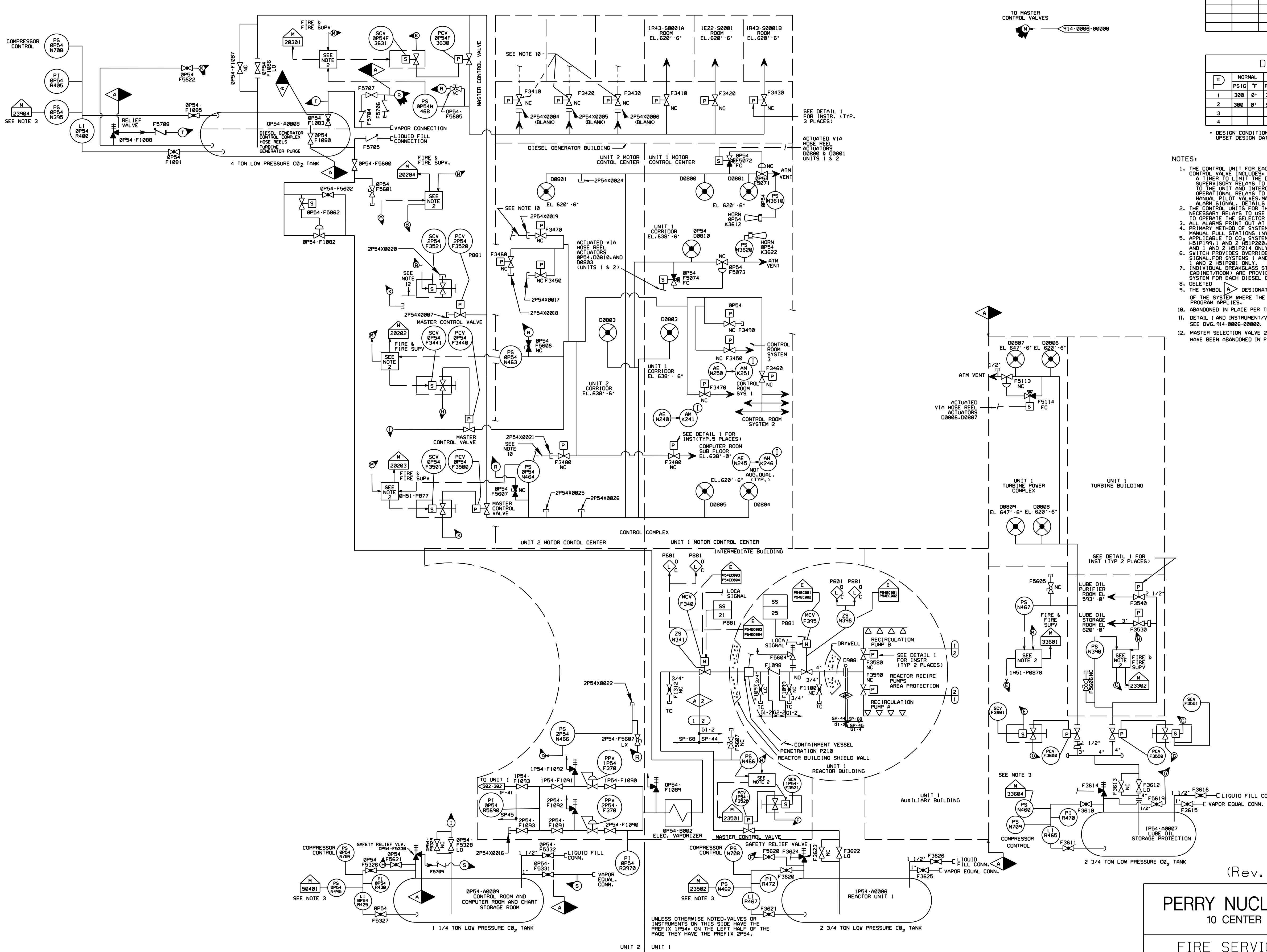
PERRY NUCLEAR POWER PLANT

Generator H_2 and CO_2 Gas Control System

Figure 10.2-5
(Dwg. D-302-302)



OPERATING DATA

#	PSIG	GPM	°F	BY	REMARKS	REV
	300		0°			

DESIGN DATA

#	NORMAL		* UPSET			BY	CHKD	REV
	PSIG	°F	PSIG	°F	TIME			
1	300	0°	300	0°				
2	300	0°	500	0°				
3								
4								

* DESIGN CONDITIONS ARE INDICATED IN THE UPSET DESIGN DATA COLUMN.

NOTES:

1. THE CONTROL UNIT FOR EACH HAZARD AREA SELECTOR CONTROL VALVE INCLUDES:
   A TIMER TO LIMIT THE DISCHARGE PERIOD
   SUPERVISORY RELAYS TO MONITOR POWER SUPPLY TO THE UNIT AND INTERCONNECTING CIRCUITRY AND OPERATIONAL RELAYS TO INITIATE OPERATION OF THE ELECTRO-MANUAL PILOT VALVES, MASTER VALVES, AND INITIATE A FIRE ALARM SIGNAL. DETAILS ARE SHOWN ON VENDOR DWG.
2. THE CONTROL UNITS FOR THE MASTER CONTROL VALVES HAVE NECESSARY RELAYS TO USE SELECTOR VALVE CONTROL UNIT SIGNALS TO OPERATE THE SELECTOR VALVES. DETAILS SHOWN ON VENDOR DWG.
3. ALL ALARMS PRINT OUT AT THE SECONDARY ALARM STATION.
4. PRIMARY METHOD OF SYSTEM INITIATION SHALL BE BY THE LOCAL MANUAL PULL STATIONS (NYYYY-6).
5. APPLICABLE TO CO_2 SYSTEMS ASSOCIATED WITH PANELS 1 AND 2 H51P199, 1 AND 2 H51P200, 1 AND 2 H51P201, 1 AND 2 H51P213 AND 1 AND 2 H51P214 ONLY.
6. SWITCH PROVIDES OVERRIDE TO INADVERTENT CO_2 HVAC FAN TRIP SIGNAL. FOR SYSTEMS 1 AND 2 H51P199, 1 AND 2 H51P200, AND 1 AND 2 H51P201 ONLY.
7. INDIVIDUAL BREAKGLASS STATIONS (1 ELECTRO-MANUAL PILOT CABINET/ROOM) ARE PROVIDED FOR MANUAL INITIATION OF THE CO_2 SYSTEM FOR EACH DIESEL GENERATOR ROOM.
8. DELETED
9. THE SYMBOL A DESIGNATES THOSE NON-SAFETY PORTIONS OF THE SYSTEM WHERE THE AUGMENTED QUALITY ASSURANCE PROGRAM APPLIES.
10. ABANDONED IN PLACE PER TECHNICAL ASSIGNMENT FILE 81653.
11. DETAIL 1 AND INSTRUMENT/VALVE CROSS REFERENCE TABLE SEE DWG. 914-0006-00000.
12. MASTER SELECTION VALVE 2P54F3521 AND PANEL 2H51P0216 HAVE BEEN ABANDONED IN PLACE PER ECP 12-0017.

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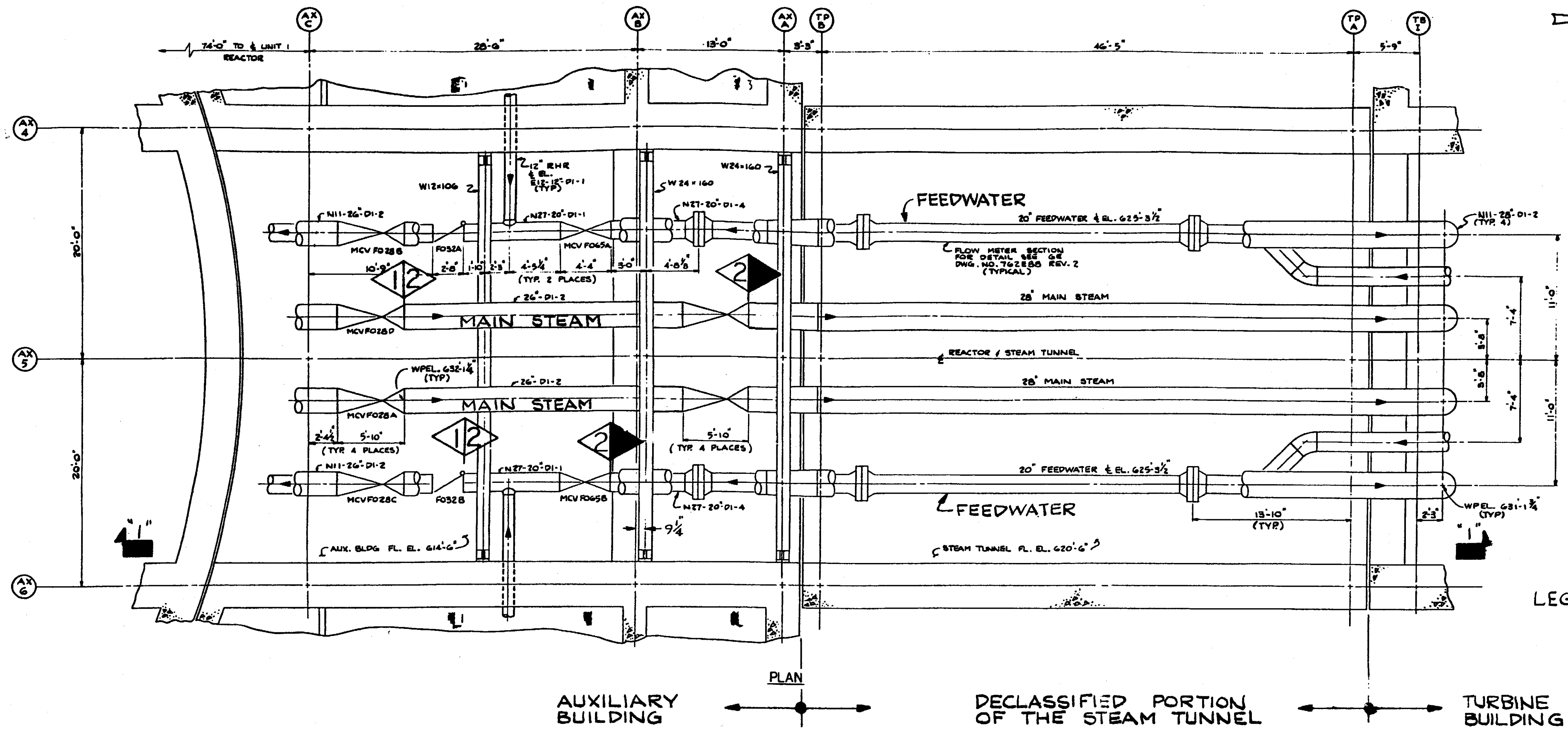
PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

FIRE SERVICE CARBON DIOXIDE

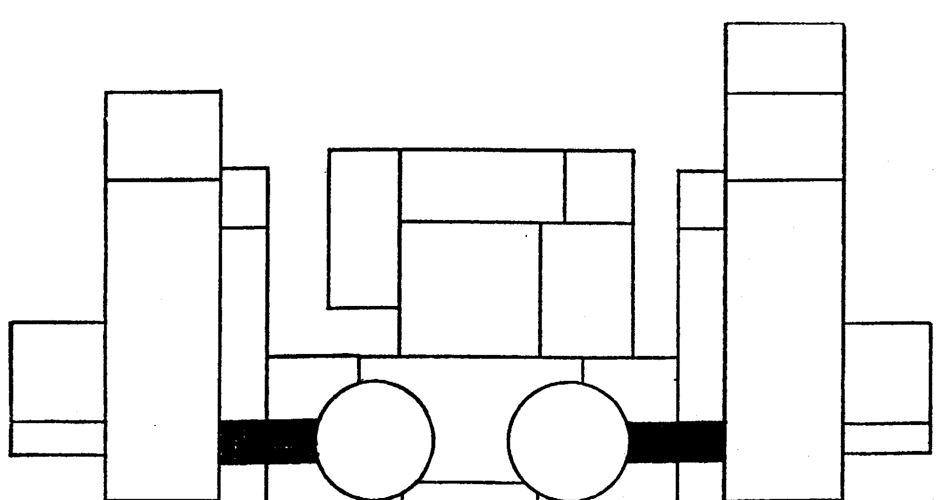
Figure 10.2-6

(DWG. D-914-0005-00000)

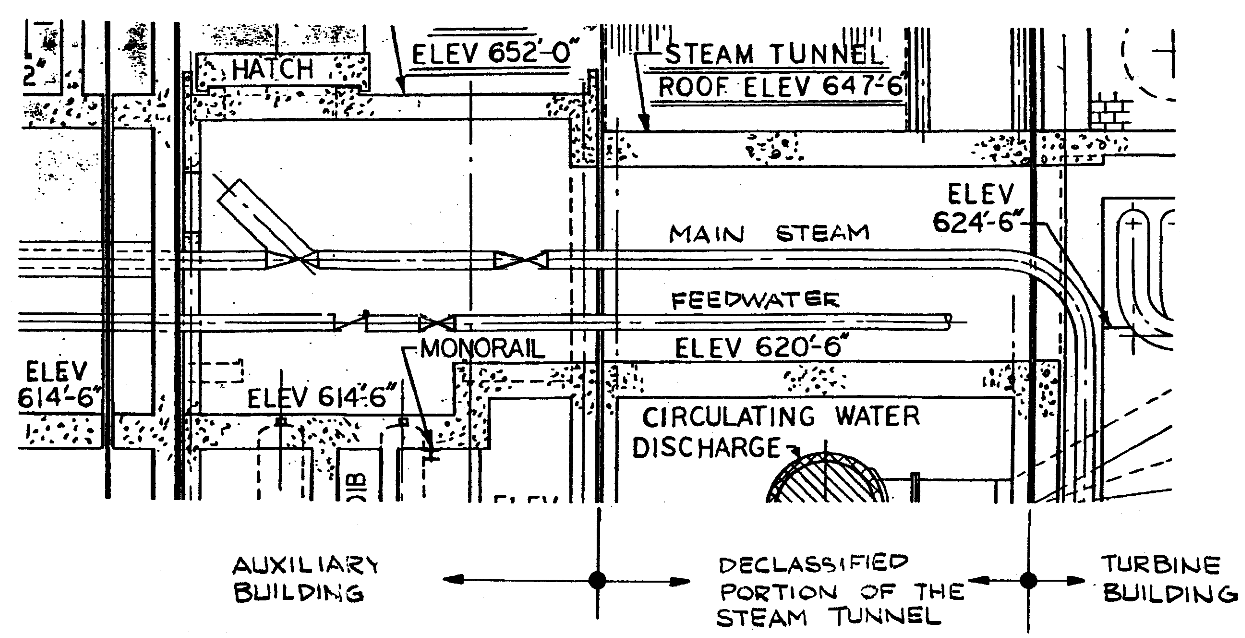


LEGEND:

- SAFETY CLASS 1
- SAFETY CLASS 2
- NON-SAFETY CLASS



KEY PLAN



SECTION 1-1

NOTE:

1. ALL BEAM SIZES, RESTRAINT LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. RESTRAINTS ALLOW AXIAL GROWTH, BUT LIMIT AXIAL ROTATION.

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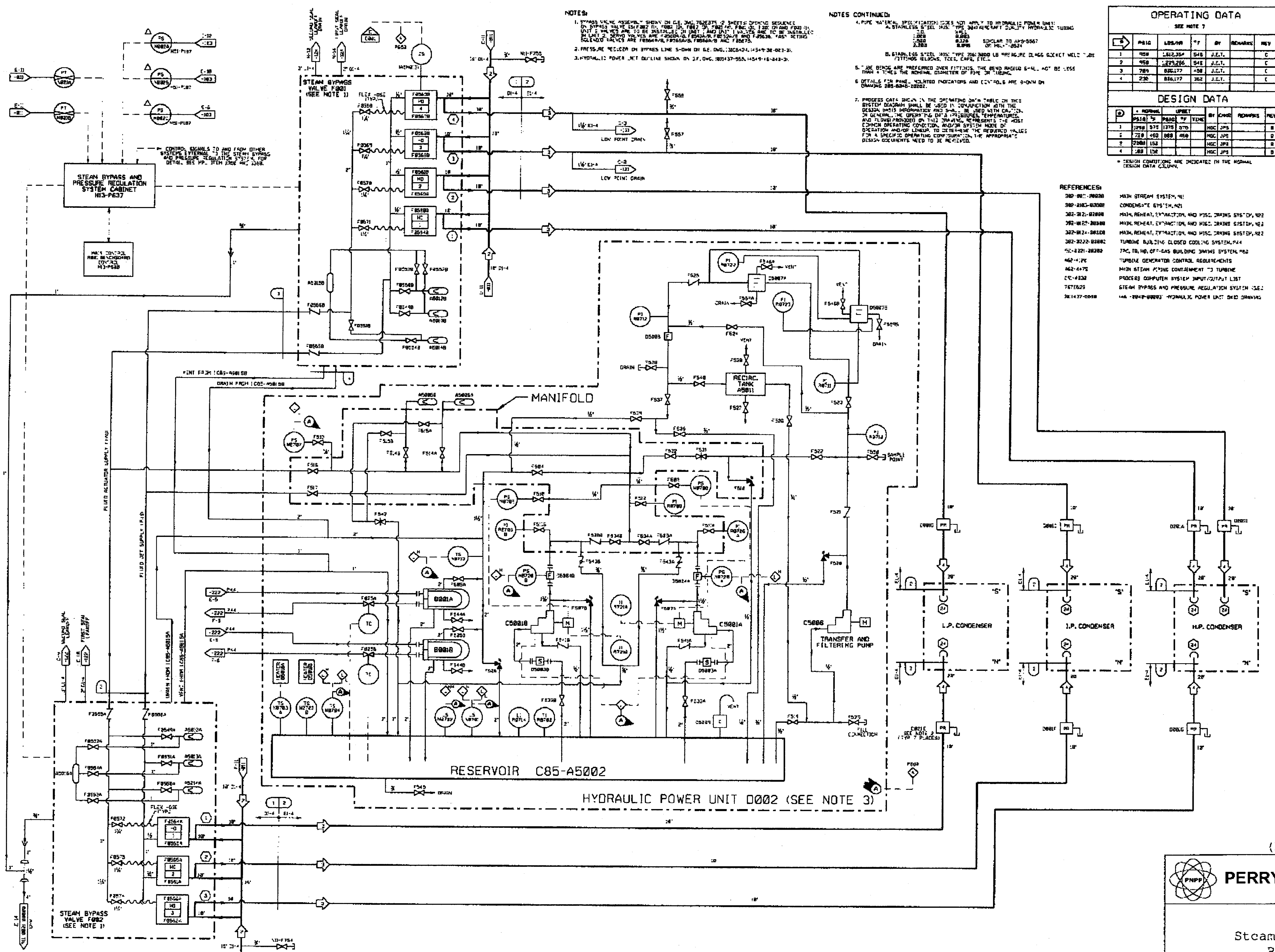
PERRY NUCLEAR POWER PLANT

Steam Tunnel Arrangement

Figure 10.3-1

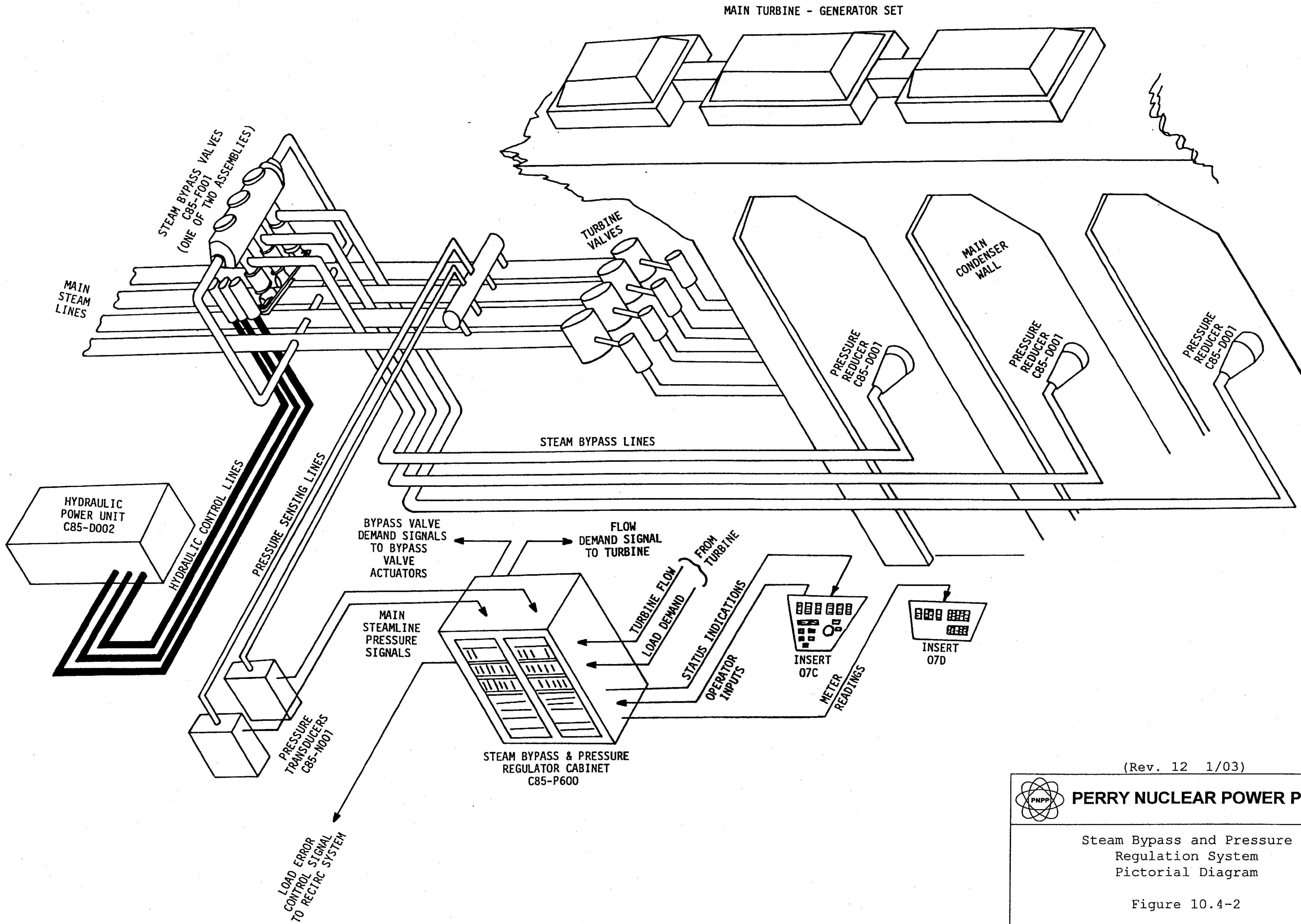


(Rev. 14 10/05)

PERRY NUCLEAR POWER PLANT

Steam Bypass and Pressure
Regulation System

Figure 10.4-1
(Dwg. D-302-021)



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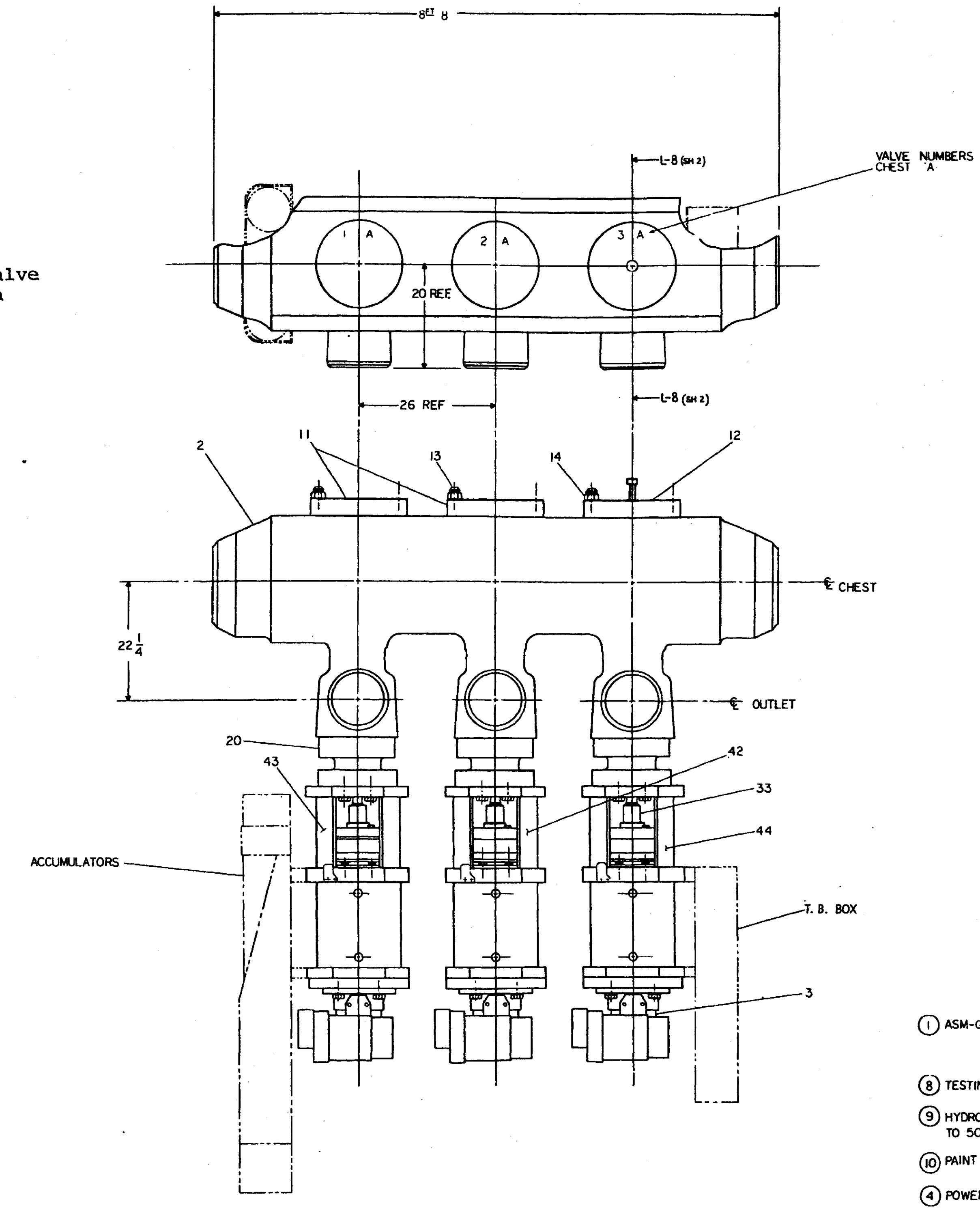
PERRY NUCLEAR POWER PLANT

Steam Bypass and Pressure
Regulation System
Pictorial Diagram

Figure 10.4-2

NOMENCLATURE

1. Assembly
2. Bypass Casing
3. Control Pac
4. Power Actuator
8. Test Instruction
9. Hydraulic Test Valve
10. Paint Instruction
11. Head
12. Head
13. Stud
14. Nut
15. Gasket
16. Valve Seat
17. Bolt
18. Lockring
19. Gasket
20. Stand
21. Stud
22. Nut
23. Gasket
24. Bushing
25. Bushing
26. Valve
27. Stem
28. Dowel
29. Locknut
30. Retainer
31. Packing Gland
32. Grafoil Pack
33. Stem Nut
34. Pin
35. Bolt
36. Bolt
37. Stud
38. Stud
39. Stud
40. Nut
41. Dowel
42. Spring Housing
43. Spring Housing
44. Spring Housing
45. Bolt
52. Lockwasher
57. Cotter Pin
60. Flange
61. Flange
62. Flange
63. Gasket
64. Gasket
65. Gasket
66. Nut



TEST DATA-FOR FACTORY USE
TEST # 1-AVE. NET UPWARD FORCE = 1728# ± 10%
TEST # 2-OPENING TIME-INDIVIDUAL VALVES = 0.26 SEC ± 10 %
OPENING TIME-ALL VALVES TOGETHER = 0.27 SEC ± 10%

(1) ASM-G1

(8) TESTING INST.

(9) HYDROSTATIC TEST VALVE SEAT TO 500 PSI

(10) PAINT INST.

(4) POWER . ACTUATOR

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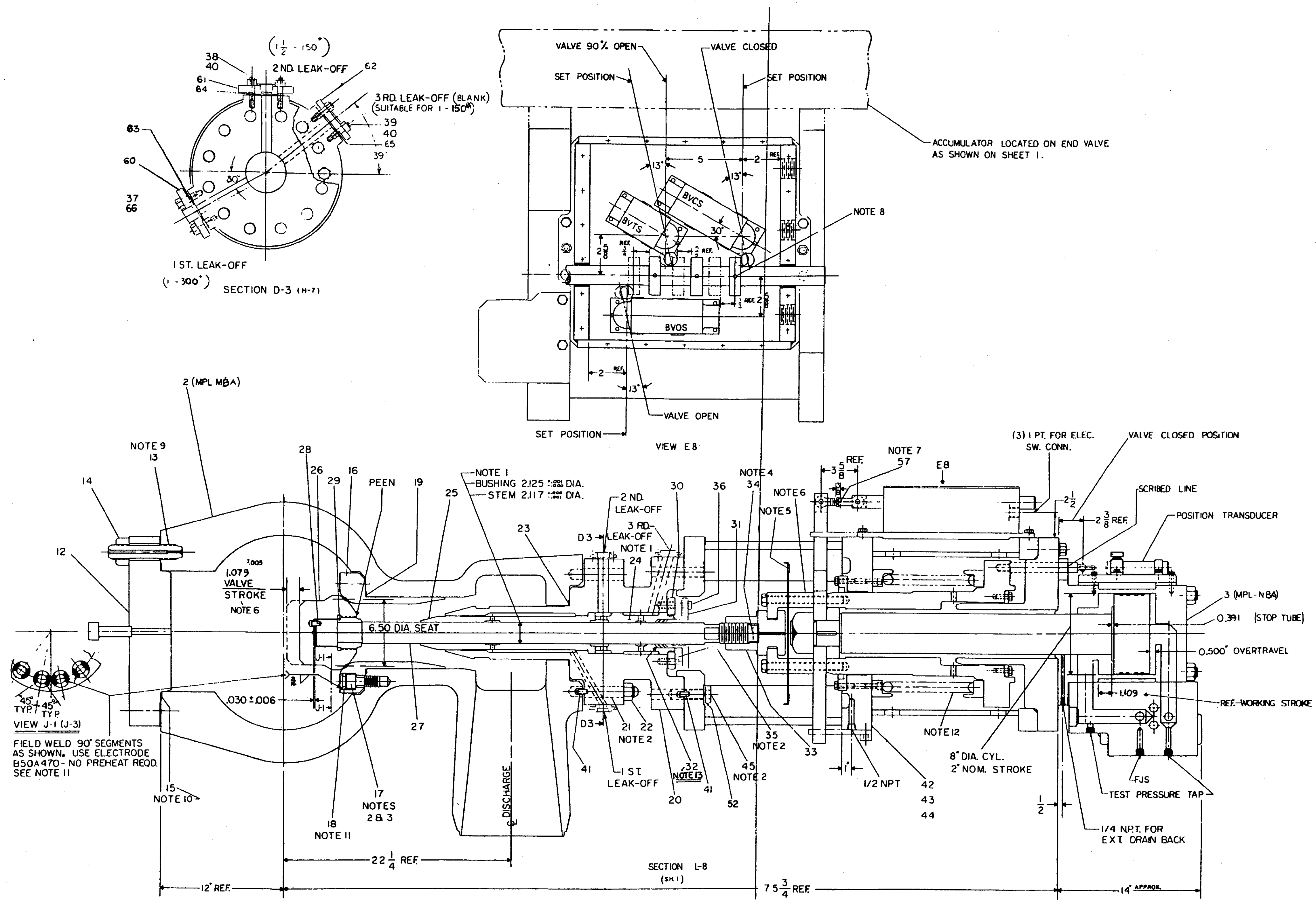
PERRY NUCLEAR POWER PLANT

Bypass Valves Chest A

Figure 10.4-3 (Sheet 1 of 2)



(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Bypass Valves Chest A

Figure 10.4-3 (Sheet 2 of 2)